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INFLUENZA: FOUR YEARS' PROGRESS*

BY

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Influenza is a disease with which we are all familiar, either as doctors or as patients. Yet it is a disease concerning which exact knowledge has been lacking, whether from the clinical, the epidemiological, or the pathological point of view. The reason is this: the term "influenza" has been used to designate a scrap-heap of upper respiratory tract infections, and one can never be sure in reading any two descriptions in the literature that the writers are referring to the same disease.

In the absence of any exact method of clinical or pathological diagnosis the only attempts to define the disease have been on an epidemiological basis; and this is not very satisfactory for ordinary mortals, whatever it may be to epidemiologists. I propose to-day to try to convince you that it has recently become possible to separate off from the influenza scrap-heap a definite disease, one, moreover, which is probably responsible for the more important outbreaks labelled "influenza." The basis of separation is in the first place aetiological: one can recover from garglings in the early stages a virus which will infect ferrets and mice. My colleague Dr. Stuart-Harris will describe later in the discussion attempts made to recognize the disease from a clinical standpoint. The results I shall now describe are based chiefly on experimental work, some of it unpublished, carried out jointly by my colleagues Dr. Wilson Smith, Sir Patrick Laidlaw, and Dr. Stuart-Harris, and myself.

The Disease in Ferrets

To recover virus from a patient unfiltered garglings are dropped from a pipette on to a ferret's nose. When virus is present in the inoculated material the ferret shows fever and nasal symptoms after about forty-eight hours. It goes off its food, lies about apathetically, and develops nasal discharge, sneezing, and, later, pronounced nasal obstruction. The temperature chart often shows two spikes forty-eight hours apart. Influenza in the ferret is infectious by contact, and to guard against cross-infections we isolate each animal in a separate cubicle.

When we appear to have infected a ferret with material from a patient we usually kill the animal at the height of its disease on the third or fourth day. We then find that the mucous membrane over its turbinate bones is engorged and that the nasal cavities are full of muco-pus. We remove the turbinates and grind them up with sand; an emulsion is obtained which can be filtered and studied in other ways to prove that it really is influenza virus which has produced the symptoms.

As a rule influenza virus will only infect ferrets when introduced directly into the respiratory tract. If passages are made without the use of an anaesthetic no pneumonia will be produced, but by serial passages in anaesthetized ferrets one can obtain a modified virus which will produce extensive, often fatal, lung lesions (Shope, 1934). These lung lesions are commonly bacteriologically sterile. The affected lungs are firm and purplish red, and much moisture can be squeezed from their cut surfaces. Histologically bronchitis and bronchiolitis are prominent features. There is patchy atelectasis and exudation of fluid in the alveoli with peribronchial infiltration of cells, chiefly mononuclears. But polymorphonuclear infiltration is not a feature, nor are the alveoli packed with cells. It is of much interest to know that a biologically modified strain of virus can be obtained having such a predilection for the lungs; also that lung lesions of this type can be produced by the virus *alone*, without, so far as we can see, any assistance from secondarily invading bacteria.

Adaptation of the Virus to Mice

Virus adapted to ferret lungs will infect mice without any difficulty, but we have had varying success in our attempts to adapt recently isolated human influenza strains to mice. All but one of a number of strains isolated in 1935 infected mice readily after only two or three passages in ferrets (Andrewes, Laidlaw, and Smith, 1935). This year we have found such adaptation more difficult: several strains of virus have refused to infect mice even after a number of ferret passages. Hoyle and Fairbrother (1937) appear to have had the same experience. Lately we have discovered that the failure of some strains to infect mice is only apparent; there is actually merely a failure to produce macroscopic lesions. If inoculated mice are killed on the third day after infection, and more mice are infected with an emulsion of their lungs, and so on, one will ultimately succeed in obtaining visible lesions in the lungs of the mice perhaps after three, perhaps only after six, passages. Quite recently Francis and Magill (1937a), using such a passage-by-faith technique, have reported success in obtaining direct man-to-mouse isolation of influenza virus without the use of ferrets at all. The importance of this to workers in laboratories where ferrets are unobtainable is obvious.

The Disease in Mice

In mice the virus produces lesions of the lungs only; the nasal passages are not affected. Perhaps in relation to this fact influenza in mice is entirely non-contagious; normal mice kept in the same cage as infected ones neither contract the disease nor become immune. This makes work with mice much easier, but, on the other hand, we lose the opportunity of what would be a really exciting study in experimental epidemiology. When first adapted to mice influenza is a relatively non-fatal disease; but after

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many passages it becomes more lethal, and infections can be produced with one ten-millionth of a cubic centimetre of filtrate. Filtrates are readily neutralized by immune sera, and a neutralization test that has yielded much interesting knowledge is thus made available.

Evidence that the Virus is the Cause of Influenza in Man

I will now summarize the evidence which convinces us that the virus we are studying is the primary cause of epidemics of influenza in man.

1. First, we have recovered the virus from garglings of fifty-three patients with the symptoms of influenza obtained at times of rather widespread prevalence of the disease. During the recent epidemic virus was isolated from thirty-one out of forty-one uncomplicated cases tested. Virus has only been obtained during the first few days of infection and not during convalescence. We have failed to recover the virus from normal people, and we have usually failed also with garglings from sporadic cases or patients in localized outbreaks diagnosed as influenza but occurring in the absence of a widespread epidemic.

2. The virus has been recovered as described above from influenza garglings taken during outbreaks not only in London (Smith, Andrewes, and Laidlaw, 1933), but from all over the world—in the West Indies, United States, and Alaska (Francis, 1934), in Australia (Burnet, 1935), in Russia (Smorodintseff, *et al.*, 1936a), in Holland, and, during the recent outbreak, in Manchester, France, Germany, Hungary, and again in the United States.

3. The serum of patients taken during the acute stages of infection is found to have little or no power to neutralize the influenza virus. But as early as the eighth day of the disease it will have acquired very definite neutralizing powers. No such neutralizing powers appear in the sera of patients suffering from respiratory diseases other than influenza. We now have some evidence that sera from the population at large, including people who have not recently suffered from influenza, contain better neutralizing antibodies just after an epidemic than just before one.

4. In 1933 we made two attempts to infect volunteers with virus which had been passed serially through ferrets; these were unsuccessful, but at the time we failed to obtain any volunteers who had not good antibodies in their sera, and such antibodies may have protected the two victims of this experiment. Last year an accident completed our chain of evidence for us. A ferret infected with a virus which had been passed in series through 196 ferrets sneezed upon Dr. Stuart-Harris and produced in him a typical attack of the disease. There was no influenza prevalent at the time, and the virus recovered was distinguishable by its biological effects from ordinary strains of human origin. There is therefore almost no room for doubt that Stuart-Harris's infection actually came from the ferret (Smith and Stuart-Harris, 1936). Smorodintseff and his co-workers (1936a) have recently recorded their success in infecting five human volunteers with the virus.

5. The irregularity with which Pfeiffer's bacillus has been recovered from influenza epidemics is notorious and cannot be explained away by blaming differences in technique. Smorodintseff *et al.* (1936) have lately carried out extensive attempts to infect volunteers with cultures of Pfeiffer's bacilli, but produced nothing comparable with influenza. Experimental "swine 'flu" has been demonstrated by Shope (1931) to be due to the combined action of a virus and a bacillus related to Pfeiffer's bacillus. On the other hand, experimental influenza in ferrets and mice is a pure virus disease in which bacteria ordinarily play no part. The evidence at present suggests that ordinary influenza in man resembles the disease in ferrets and mice in being purely a virus infection; further, it seems likely by analogy that the virus alone may cause pulmonary complications; but it is all too familiar to us that streptococci, pneumococci, staphylococci, and Pfeiffer's bacilli may on occasion play a very serious part as secondary invaders of the lung.

Immunological Aspects

Naturally we are all interested in possible practical applications of recent work on influenza, particularly in the possibility of prophylactic vaccination. In order to make the matter clearer I must first relate something about immunity in ferrets and mice.

IMMUNITY IN FERRETS

Ferrets which have recovered from an attack of influenza develop potent neutralizing antibodies in their sera and are completely resistant to reinfection for about three months. But after six months their immunity has definitely waned; antibodies, though still recognizable in their sera, are less than before, and the animals will develop some fever and nasal symptoms when a heavy dose of virus is given intranasally.

As already mentioned, influenza virus given subcutaneously or by routes other than into the respiratory tract does not infect—or only very exceptionally. It will, however, produce some immunity, especially when several doses are given. The immunity produced by vaccination is shown by: (i) the production of antibodies; (ii) the milder nature of the fever and symptoms; (iii) complete protection against the development of lung lesions; (iv) protection against the less severe test of exposure to contact with an infected ferret; (v) restoration of waned immunity to the complete state. By this is meant that ferrets whose immunity has fallen off six months after an infection are rendered once more completely immune by one dose of subcutaneous vaccine (Smith, Andrewes, and Laidlaw, 1935).

It would be more satisfactory if normal ferrets could be completely immunized by vaccination, but the results as they stand are not discouraging. It must be remembered: first, that human beings in an epidemic are exposed only to contact infection, against which vaccination does protect ferrets, not to massive intranasal instillations of virus; secondly, that almost all adult human beings have been exposed to influenza in the past and thus have some basic immunity which merely requires reinforcement. They are thus comparable rather to the ferrets with waned immunity than to fresh untreated ones.

IMMUNITY IN MICE

In mice influenza is a disease of the lungs; and just as vaccination is very effective in protecting ferrets against lung lesions, so it is in mice. Two subcutaneous or intraperitoneal injections give a substantial immunity; in many experiments all the mice of a vaccinated group have survived a dose of virus which has killed all, or almost all, controls. Further, when the vaccinated mice have been killed at the close of the experiment the lungs of most have appeared normal. After two doses of vaccine the immunity of mice appears to last for ten but not for sixteen weeks; this is as long as the immunity of mice which have actually recovered from an infection. Protection experiments in mice have lent themselves to the quantitative study of a number of problems, particularly those designed to find a suitable vaccine for use in man.

A most important result of such studies is the finding that virus inactivated by 1 in 5,000 formaldehyde is almost

if not quite as effective an antigen as is living virus. It is still the fashion, particularly in America, to make the statement that a "killed" virus cannot immunize. Influenza virus inactivated by formaldehyde appears by all the tests we can apply to be as dead as a doornail, and I feel that it is rather up to anyone who maintains that it is still alive to produce some supporting evidence.

It is satisfactory to be able to use a safely inactivated virus; it would be better still if we could use one freed from unwanted proteins. Virus filtrates have accordingly been washed on a collodion membrane with pores of such a size that the virus is all held back while the mouse proteins are washed through the membrane. Thus is obtained a water-clear fluid as effective in immunizing mice as the untreated filtrate. Most unfortunately it is found that while formolized virus is almost as effective an antigen as living virus, and purified virus is as effective as unpurified, yet virus which has been both formolized and purified fails to act as a good vaccine—we do not know why (Andrewes and Smith, 1937).

This is particularly unfortunate, since it appears that the presence of foreign protein interferes with the antigenic response to a virus. Thus we found that vaccine made from infected mouse tissues was very effective for immunizing mice, while vaccine made from infected ferret tissues was not. Shope (1936) has observed the same thing. Lately we have discovered that if mouse vaccine is mixed with an extract of normal ferret tissues the immunizing effect of the vaccine for mice is badly interfered with.

Vaccination of Man

Though we have not yet succeeded in eliminating the mouse protein from the vaccine available without spoiling it, we have made preliminary attempts at vaccinating human beings. Francis and Magill (1937) have made similar attempts, using living virus grown, as many viruses can be grown, on tissue cultures of chick embryo. They have succeeded with such a vaccine in inducing a rise in antibodies in the vaccinated subjects. Stokes *et al.* (1937) have also used a living vaccine made from mouse tissues, and claim that there was a lower incidence of influenza among the vaccinated members of the community they studied than in the control group; there is, however, no certainty that the respiratory disease which afflicted that community really was epidemic influenza. We have chosen to err on the side of caution by using only formalin-inactivated virus, and we too have followed the neutralizing antibodies in the people we have vaccinated. One dose of 2 c.cm. of vaccine subcutaneously has produced only a trifling local tenderness and has engendered a very satisfactory rise in antibodies. Among thirty volunteers, all soldiers at Woolwich, we obtained an average increase in antibodies of twenty-five-fold when we compared bleedings taken a fortnight after vaccination with those obtained beforehand. A few results of ours confirm those of Francis and Magill that not much rise occurs until after a week from the time of injection. A satisfactory feature was that one dose of vaccine produced as good an antibody rise as did two spaced a fortnight apart.

Encouraged by these results we began last December to make enough vaccine to inoculate larger numbers of people and to test whether an actual resistance to natural infection would be produced. It was arranged through the kind co-operation of the Army authorities to vaccinate five groups, each of about 100 men, in different units and to designate similar numbers as comparable controls. But scarcely had we begun when the epidemic burst upon us. We did not expect from the serological results that any active immunity would be produced until at least a week after injection, and it happened that in most of the vaccinated and control groups influenza appeared within a day or two of the vaccination. In two groups no influenza occurred amongst either the vaccinated or the unvaccinated controls. We thus have no certain evidence as to the efficacy of the vaccine. There is, however, suggestive evidence that the vaccine is not as good as we should like it to be. Four persons, vaccinated at least a fortnight beforehand, nevertheless developed clinical influenza, and from them we obtained the virus; so we at least know that the method is not 100 per cent. perfect.

And now there has arisen a new complicating factor. We no longer feel sure that all strains of human influenza virus are serologically identical. Magill and Francis (1936) reported lately that two strains of human influenza virus isolated by them in 1934 could be sharply distinguished from each other serologically by means of anti-sera made in rabbits by a particular method. We have been repeating this work, and have reason to suspect that the two strains which they have separated, both of them carried for many generations in tissue culture, have become antigenically changed in the course of this propagation. This might lead us to doubt the importance of the differences found. On the other hand, we have observed that some strains of virus isolated in England in 1937 are not identical with the W.S. strain with which we have worked since 1933 and which we used to prepare our vaccines. The difference is revealed by titrations of ferret sera as well as of rabbit sera, and also in cross-immunity experiments. There is a considerable antigenic overlap, and the strains are more closely related to each other than to the swine-influenza virus; but there are distinct differences. The importance of differences between strains to prophylaxis and to epidemiological studies one can at present only guess at. The tangle is not going to be an easy one to unravel.

Conclusion

I will conclude by re-emphasizing three main points:

First, epidemic influenza in man is caused by a virus which is transmissible to ferrets and mice.

Secondly, progress in our knowledge of influenza may largely depend on our recognition that this specific disease has hitherto been mixed up with other respiratory infections.

Thirdly, there are grounds for hope that an effective prophylactic against influenza may be found, though there are still many obstacles to overcome.

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EPIDEMIC INFLUENZA

A CLINICAL POINT OF VIEW*

BY

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Although the filterable virus of epidemic influenza was first isolated in 1933, no work has been carried out until recently which has combined a clinical and a pathological study of the virus disease. During 1936 we investigated clinically and attempted to isolate virus from four localized epidemics which had been diagnosed as influenza. We did not recover virus, and we obtained serological evidence that the virus was not concerned. Then in December, 1936, the widespread influenza epidemic afforded us an opportunity of correlating the clinical events in man with the isolation of the virus from individual patients. Most of the clinical work in these combined investigations was for several reasons carried out upon patients in the Services. Chief among these were the facts that the men were all healthy before the illness, so that the picture of the disease was clean; and, secondly, that the patients were admitted to hospital early in the course of the disease, which enabled the whole illness to be studied and facilitated the recovery of the virus.

The principal question throughout the work has been whether influenza virus infection in man constitutes a clinical entity or not. Experience in a further epidemic and in the civil population will have to be gained before our tentative conclusion that it does constitute an entity can be proved. The evidence for believing that we were dealing with an entity during the recent epidemic was threefold. First, the disease presented a remarkably uniform clinical picture, case after case exhibiting similar features. It is true that the severity of the disease varied somewhat in the different areas, but the general picture was everywhere the same. Secondly, this characteristic clinical picture was correlated with the recovery of virus from the throat in a high proportion of cases. We were not able to test every patient owing to the number of ferrets required, but representative individuals from groups of similar clinical type were chosen and virus was isolated from twelve out of fifteen patients with straightforward influenza who were tested and whom I saw myself. Thirdly, the clinical picture we attempted to delineate during the 1936–7 epidemic differed from that seen in previous epidemics which we had studied and from which virus was not obtained.

Variations in Clinical Type and Experimental Analogies

During the influenza epidemic certain analogies became evident between influenza virus infection in man and the experimental disease in ferrets and mice—particularly between man and the ferret. Influenza virus can produce in the ferret either a short fever with lassitude, nasal symptoms, and nasal lesions, or an illness accompanied by the development of lung lesions varying in extent from small patches of bronchiolitis and atelectasis to fatal pneumonic consolidation. Similarly, although the more usual illness in man that was of virus aetiology was a three-day or four-day fever with constitutional symptoms and signs of upper respiratory tract infection, other cases from which virus was obtained had signs of chest disease. The commonest type of chest abnormality was a basal condition with rales and suppressed breath sounds, which I believe to be due to a bronchiolitis with patchy atelectasis or scattered areas of consolidation. Virus was isolated from each of five patients tested who had signs of this condition. Frank pneumonic cases, however, did not usually yield virus from garglings and sputum by the time that lung signs were definite, but bacteria such as pneumococci were then recovered; however, one case of pneumonia yielded virus from garglings and sputum on the fifth day of the disease, when consolidation of lobar distribution was present, and virus was also recovered from the lungs in three rapidly fatal cases of pneumonia.

An interesting example of the similarity of the infective process in man and the ferret was seen in connexion with the pyrexia. Several different types of fever were observed in man, including a single peak, a remittent fever, and a fever with two peaks. This latter type, which was seen in 25 per cent. of patients, was of special interest, because it resembled the diphasic fever seen so commonly in ferrets infected with influenza virus.

In addition to the typical cases of influenza a number of mild infections and afebrile patients with symptoms were seen in some of the epidemic areas. Two afebrile patients were tested for virus, but this was not recovered, and although it is possible that such cases represented abortive infections by the virus, such as have occurred very occasionally in the ferret experimentally, we have no proof that the human infections were so caused. Suggestive serological evidence was obtained that subclinical infections by the virus can occur in man; and if this is so, then afebrile patients with symptoms would logically form the next grade of severity to such silent infections.

Finally, some patients presented the ordinary picture of the epidemic disease but suffered from repeated vomiting at the onset of illness. One such case was tested, and virus was recovered from the throat, but another patient who suffered from diarrhoea as well as vomiting and had no respiratory symptoms did not yield virus. No other cases with intestinal symptoms were seen throughout the epidemic, and so, although a form of infection with gastric symptoms at the onset can be due to the virus, there is no proof of the existence of a separate and distinct gastro-intestinal form of the virus infection.

Differentiation of Epidemic Influenza and "Febrile Catarrhs"

With regard to the question of differentiating the virus disease from other conditions resembling epidemic influenza, the form of the epidemic may help. At Chatham where cases from the naval barracks were studied, an epidemic occurred in November, 1936, of tonsillitis and of a pharyngo-laryngo-tracheitis disease. Influenza virus was not recovered at this time, but in January, 1937, a sharp epidemic occurred and virus was now found. The explosive onset of the influenza epidemic contrasted with the slow rise of the previous epidemic from the endemic respiratory infections. Again, the influenza epidemic was soon over in each area and rarely lasted longer than a fortnight; secondary waves were seen, particularly at Chatham, but in each case these were due to the spread of the epidemic among new entries to the barracks, either those returning from leave or visitors to the port. Finally the influenza epidemic consisted of cases of similar clinical type though varying in severity, while the previous Chatham epidemic included two groups of cases, one with frank tonsillitis and the other with pharyngo-laryngo-

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tracheitis. For these latter cases, which yielded no evidence of influenza virus infection, we propose to use the term "febrile catarrhs." It must be emphasized that the name refers to a group of conditions forming the scrap-heap of epidemic respiratory infections resembling influenza but of unknown aetiology, and not to a specific condition.

On clinical grounds the first symptoms of illness which are complained of show a sharp contrast between epidemic influenza and febrile catarrh. Table I shows an analysis of the symptoms at the onset in eighty-four cases of straightforward influenza contrasted with those in twenty-eight cases of febrile catarrh.

TABLE I.—*Symptoms at Onset*

		Epidemic Influenza	Febrile Catarrhs
Premonitory symptoms		13 per cent.	28 per cent.
Sudden onset		75 „	42 „
Symptoms during the first 24 hours of illness	Headache	54 „	17 „
	Shivering	39 „	10 „
	Muscular pains	21 „	7 „
	Cough	20 „	35 „
	Malaise	18 „	3 „
	Coryza	15 „	21 „
	Insomnia	14 „	1 „
	Sore throat	11 „	42 „
	Dizziness	11 „	14 „
	Vomiting	6 „	0 „
	Fainting	2 „	0 „
	Abdominal pains	1 „	0 „
	Sweating	1 „	0 „

TABLE II.—*Symptoms During the Course of the Fever*

	Epidemic Influenza	Febrile Catarrhs
Malaise	91 per cent.	82 per cent.
Headache	87 „	64 „
Anorexia	77 „	70 „
Shivering	74 „	70 „
Coryza or nasal obstruction	73 „	70 „
Cough	71 „	86 „
Dizziness	62 „	64 „
Muscular pains	51 „	53 „
Sore throat	43 „	80 „
Ocular symptoms	33 „	21 „
Insomnia	32 „	40 „
Sweating	31 „	50 „
Expectoration	30 „	50 „
Pains in chest	24 „	40 „
Epistaxis	21 „	21 „
Constipation	21 „	28 „
Nausea	21 „	3 „
Vomiting	11 „	28 „
Dyspnoea	11 „	0 „
Abdominal pain	8 „	28 „
Hoarseness of voice	6 „	40 „
Fainting	4 „	0 „
Faintness	2 „	3 „
Diarrhoea	0 „	3 „

Premonitory symptoms such as coryza, sore throat, or cough are uncommon in influenza, which starts abruptly in the midst of good health. In febrile catarrh, however, the disease begins frequently with a cold, and fever follows in some days' time. Moreover, the first symptoms in influenza are of the general or constitutional type and not of a respiratory nature. Considering the symptoms throughout the fever (Table II) the contrast is less striking. Again, however, general symptoms dominate the illness in influenza, and local respiratory ones predominate in febrile catarrh. Certain symptoms deserve special mention. Cough was short and dry in influenza, but paroxysmal, tearing, and barking in febrile catarrh. In association with the cough, substernal soreness of the chest was more striking in febrile catarrh, which is often a tracheitis. Sore throat is not a feature of influenza, but is constant in febrile catarrh. Laryngitis is rarely severe in influenza, but a very hoarse voice is common in febrile catarrh. Certain other symptoms, however, such as muscular pains and epistaxis, show no difference in frequency in the two diseases.

The differences are summarized in Table III, and there is no doubt that the two conditions show a contrast when the cases are considered in groups. The difficulty arises when individual patients are seen. Then the general appearance may help, for this is very characteristic in typical influenza, being heavy with drooping eyelids half covering suffused and watering eyes, a dusky malar flush, an obstructed but not running nose, and a furred tongue. The pharyngitis of influenza involves the posterior wall and is dry in contrast with the moist tonsillar and pharyngeal inflammation of febrile catarrh, which often exhibits exudate. Nothing comparable with the bronchiolitis and influenzal pneumonia cases seen recently was encountered in the previous epidemics, although a basal bronchitis or a bronchopneumonia occurs as a complication of febrile catarrh. The blood count was not of help in diagnosis, no definite abnormality being found in the leucocytes in either disease, and the absence of leucopenia, post-influenzal debility, and depression from the patients in the Services during the recent epidemic was surprising in view of the general belief in these phenomena as criteria of influenza.

TABLE III.—*Differential Diagnosis of Epidemic Influenza and Febrile Catarrhs*

	Epidemic Influenza	Febrile Catarrhs
Onset	Sudden	Insidious
Symptoms	Constitutional symptoms preponderate	Respiratory symptoms preponderate
Cough	Short and dry	Paroxysmal, irritating, painful, often productive
Voice	Husky	Hoarse
Throat	Posterior pharyngitis; no exudate	Tonsillitis as well as pharyngitis; exudate common
Fever	Sometimes diphasic	Rarely diphasic
Complications	Bronchiolitis and pneumonia	Bronchitis or bronchopneumonia
Epidemic	Short, with rapid "peaking"	Prolonged and "grumbling"
Contacts	Clinical picture uniform, although graded in severity	Clinical picture variable, with frank tonsillitis in contacts
Leucocyte count	Not diagnostic	Not diagnostic
Virus	Influenza virus recoverable from pharynx	Influenza virus not concerned

In conclusion, I cannot say that it is possible to diagnose epidemic influenza with precision, but I hope I have convinced you of the existence of a clinical entity in that epidemic disease which is associated with the influenza virus.

We are extremely indebted to the Admiralty, the War Office, and the Air Ministry for their permission to work in Service hospitals, and would also like to thank all the officers concerned for their kind co-operation.

STRUCTURE OF THE PERSONALITY IN PSYCHOTHERAPY*

BY

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Medical treatment by psychological methods is governed by certain guiding conceptions. In the older psychotherapy the leading principle is that of suggestion; in the more recent that of psycho-analysis. In neither is the study of the finer structure of the personality the aim. Suggestion can very well be practised as mass or group suggestion; in fact, frequently those suggestions are strongest and most effective which ignore the single individuality and bring it down to a common level. In the psychoanalytical schools it is the problem of experiences, their elaboration, transformation, and after-effects, which is in the foreground; the other half, the inner structure of the personality which is influenced thereby, receives little attention. It is not at this moment my purpose to state my attitude to all these various methods of psychotherapy, but rather to tackle the problem for once from the opposite side, to show it in the light of the personality and its inner biology.

The Meaning of "Structure of the Personality"

When we speak of the "structure of the personality" we have in mind, as the term implies, something more or less rigidly built up, a structure or a system of structures, a series of a certain number of "qualities" which can be defined in words and which manifest themselves in such and such a manner. This structure would have gradually taken shape and developed through the bilateral operation of the constitutional make-up and the outside world, particularly in childhood and youth. In adults it could figure as a fairly definite constant calculable factor, especially in those cases in which, in the course of psychotherapy, one has to study its typical responses to the outside world. This line of thought links up with the concept which would equate an individual's inherited equipment with that which is constant or fixed in his personality, a point I will refer to later.

The question, What is inherited in the personality? is indeed of fundamental importance not only for eugenics but also for psychotherapy, because, conversely, it is on this that the question depends: What has accrued to the personality from the outside, and can hence be modified by outside influence? But first of all an important question must be outlined more precisely. Generally one starts out from the tacit premise or equation, "psychogenic = responsive to psychotherapy"; in other words, everything that has originated by way of the psyche can also be removed by way of the psyche, and, conversely, all endogenously derived pictures are outside the scope of psychotherapy. Although these propositions, as applying both to the healthy and to the diseased personality, approximate to the truth they call for critical inspection.

The Negative Thesis in Psychotherapy

Already the negative thesis, "endogenous = non-responsive to psychotherapy," has proved to be not altogether valid. There are, however, optimists who state that schizophrenia can be cured by psychotherapy; I have never yet seen evidence of this in severe progressive cases. It would imply that the schizophrenic process is reversible down to its roots by psychotherapy. But let us bear well in mind the difference between "reversible" and "formable." If we cannot bring about an involution of the endogenous elements of the schizophrenic process by psychic means we can nevertheless maintain that the form which it takes can be influenced by psychotherapy at every stage. This is especially the case when the endogenous process no longer shows acute progression. Today it is no longer seriously contested that we have been regarding the schizophrenic symptoms far too much as a finished product, as it were, of the endogenous process. The more active treatment of patients, as it is now legitimately practised in mental hospitals, has shown that even the severe final stages can be modified; this means that complicated symptoms and powerful dynamic manifestations of the psychosis can be made to disappear partially through psychic influence, and that in their place responses can be produced which are nearer to those of healthy subjects. The pictures are therefore reduced to their innermost and truly endogenous nucleus, which is of course irreversible. This core or nucleus consists, in the first place, of certain operative patterns of the psychic mechanism, which may be regarded as constant not in the sense of being static but as representing a dynamic group of factors. How far these pathological tendencies of the psychic apparatus contribute towards the development of the related typical delusional ideas or psychomotor effects depends, within certain limits, on outside influences and hence also on a planned psychotherapeutic technique.

One might say such treatment is "only" symptomatic. The "only" is not, however, always appropriate in milder cases, since in our efforts in the realm of genetic biology we are quite exclusively concerned with the endogenous factor. But for the therapeutic result in the individual patient it can very well be decisive, whether a pathological factor develops into an outward symptom or whether it remains within the framework of an endogenous reaction tendency. This "only" can determine his fate; it can decide whether he will be socially incorporated or rejected.

All this becomes far clearer and more important when we leave the realm of the severe endogenous catastrophes and consider the milder borderline cases, the endogenously determined dislocations and variations of personality that are unaccompanied by psychosis. Consider, for instance, a schizoid psychopathy, one of the nuclear symptoms of which—autism—is manifestly rooted in the constitutional components of the personality. The intelligent young schizoid soon becomes aware of his peculiar inner sensitiveness, the resultant difficulties of establishing contacts, and his tendency to peculiarity; it becomes his problem in relation to himself and to the outer world. This problem is no longer endogenous but signifies a reactively determined psychic attitude. The personality becomes aware of its being different, it seeks form and adjustment. And at this stage psychotherapy can be of decisive help. Or it can depend whether the person finds his appropriate *modus vivendi et laborandi*, or whether he shrinks into himself to become a freakish eccentric. Similarly, increased difficulties during puberty are characteristic of the schizoid constitution; but whether or not he comes to grief in the collision with the parents is often decided by psychotherapy. Similarly there are certain appropriate kinds of milieu in which hypomanic or phlegmatic persons can lead constructive and productive existences; and, conversely, certain ways in which such persons can come to grief are determined by their constitution. Not the constitution in itself but the finding or not-finding of

* One of three lectures given at the Tavistock Clinic in April.

the appropriate milieu determines their destiny; and that is where psychotherapy comes in. It is a striking fact, discovered by Mauz in his work on epilepsy, that the clinically familiar explosive kind of epileptoid syndrome develops phenotypically chiefly among the lower social classes. The same endogenous disposition rarely manifests itself in that form among the educated classes; which means that the decisive symptom, the brutal explosiveness, fails to develop because it is inhibited by educational and environmental influences.

The Opposite Thesis

Now let us elucidate the opposite thesis: "Whatever has originated primarily as the result of external psychic stimuli must be regarded as curable by psychic means." But this thesis, too, is not so straightforward as is usually thought, especially in complicated, multidimensional formations. In the border-zones of schizophrenia or in non-typical depressions we encounter again and again individual cases which are precipitated by a severe psychoreactive shock and do not develop as a typical psychogenic disorder; instead, their course is governed in accordance with endogenous, constitutional dynamics; and once this process has been activated the way back to the psychogenic (exogenous) levels is finally lost. Similar observations can be made in the field of paranoia—for example, in the case of querulents whose illness was clearly reactively determined or in severe cases of pseudo-dementia of long duration, or again in those rare cases of prison psychosis which become chronic. In all these fields abnormal developments of personality occur in which the equation, psychogenic = responsive to psychotherapy, does not properly apply. In such cases the admittedly reactive origin cannot fully account for the resultant psychic disorder; or, at least, a dynamic disproportion becomes apparent between the swift and facile psychoreactive onset and the difficulties of resolution by psychotherapy.

Apart from these cases there still remains a psychotherapeutically unresolvable or hardly resolvable residuum, which can only be explained in terms of non-reversible processes in the endogenous structure of the personality. Such a process may take place before or after the onset of the psychic reaction. In the first case the psychoreactive formations grow in the soil of a personality which has already previously undergone an imperceptible progressive change; this may often be observed in paranoiacs. If we study the past history of such a querulent prophet or inventor, we may come across a slight warping of the developing personality round about puberty for instance—no destruction, no endogenous psychosis, but an imperceptible endogenous change. From now onwards the psychic machinery begins to run in a different gear. Affective dynamics, sense of values, logical appreciation—all these are somehow changed; claims between the ego and the outside world are somewhat differently evaluated. From now on there is a new endogenous foundation on which a new secondary personality picture begins to take shape; but this second picture is not a definite finished product of an endogenous revolution. It is only that new dispositions, new modes of response, and new workings of the psychic mechanism have been created, which in their turn immediately begin their reciprocal action with the stimuli of the outside world. It is only from this reciprocal action that gradually, in the course of years, a new development of the personality, a new picture of the personality, takes shape, which we may term paranoiac, a picture that reveals certain religious, sociological, legalistic, or technically constructive activities which could not be observed previously. Once this endogenous basis has been established extensive reactive effects of strong emotional experience and of stimuli of the outside world become possible, just as in any other person; and they produce symptoms and mould the personality. Thus a new structure of the personality can originate which is emphatically understandable trait by trait in its development and the psychogenic origin of which is perfectly apparent. Sometimes it also responds to psychotherapy. But it is not so easily reversible as its obvious psychogenic dynamics might lead us to suppose, for the underground working of the endogenous moiety of the personality—as seen with the eye of the normal person—is slightly perverted, which makes the psychotherapeutic approach more difficult and renders relapses more likely.

Conversely, the endogenous dislocation at the constitutional level can begin only after the psychic reaction. Pictures of this type are specially obscure in the construction of their symptoms; they are prognostically incalculable and ambiguous as to their inner causal relations. I am thinking, for instance, of a few rare cases of severe pseudo-dementia of long duration which I have occasionally come across and which are referred to in the older literature on chronic prison psychosis. They begin, for instance, after an accident entailing damages, or under the threat of criminal proceedings: massive hysterical pictures, not far removed from malingering; the relation of the content to the precipitating psychic situation, the decidedly psychogenic type of the affective-dynamic situation, and the tendentious coloration of the whole picture are very striking. Some cases of that kind do not remain fully psychoreactive: if one re-examines them years later the outward appearance is in the main almost unchanged, but it now produces a dull, petrified effect. The claim for compensation is maintained; but there is an absurd disproportion between the gain that can be anticipated and the severity and duration of the sacrifice of every form of vital interest. No longer can we detect a powerful inner reaction to a situation that has been tackled with hysterical vigour, nor the ingenuity of true malingering, nor yet the drive of genuine querulousness. Behind the hysterical façade we encounter a grave loss of vitality manifesting as hypochondria, a chronic loss of elementary drive and interest in work and recreation, such as no normal person could possibly simulate. There are cases among these which the critical observer can no longer fit into the framework of the merely "psychogenic" without his being able to detect the moment when the originally purely reactive picture changed its character or to specify the individual symptoms which constitute the change. We cannot say that at this point or at that point the hysterical reaction has been reinforced or superseded by an endogenous psychosis. Also we cannot say for certain what part causality plays as between the various factors. We can only say that behind an originally purely reactive disorder something else which is somehow connected with the endogenous vitality of the person has imperceptibly crept in. Finally, the divergence from the behaviour of an ordinary person in the same situation has become so great that it can no longer be fully explained even in terms of chronic hysterical habituation and facilitation. There are rare terminal pictures of this kind which make the patient appear no more capable of practical life than in the final stages of schizophrenia.

In view of their rarity the importance of such cases is not essentially a practical one. Their significance lies rather in the sidelights they cast on the dynamic principles of the human personality (in health and disease), and on

the intimate interplay of endogenous and psychoreactive forces. They also illustrate especially well the fluidity of the endogenous background of the personality throughout life, which, in psychic treatment, we too often forget in favour of an ostensibly rigid structure of the personality which is quite fictitious.

One could adduce instructive examples from the psychology of everyday life which reveal this interaction between psychic reactions to the outside world and vital losses of inner tension. If we consider healthy persons who have lived for a long time in forced seclusion, servitude, or in prison, we find that some of them are afterwards unable to find their proper place in a normal environment. It is said occasionally that they are "broken" in spirit. That is a sentimental expression, but it signifies something which is quite correct. The process, in fact, has a reactive origin, as a purposeful adaptation to an impoverished and oppressive situation, as a loss of "starch" in the personality, as a diminution of will and energy, as a limitation of interests and needs. One would expect that the personality, when relieved of the outer pressure, would spring back to its former position; but in some cases it fails to do so. Instead the patient finally exhibits a loss of vitality, a certain desolation and indolence which causes him to shrink in discontent from formerly valued activities. Similar pictures may be observed in persons who, without suffering from a serious physical illness, have been in receipt of a pension for many years which has spared them the struggle for life. When they lose this pension they are not only unwilling to work but sometimes lose the very ability to work: they have lost vital potentialities of activity which are never re-established.

A similar meaning attaches to popular phrases such as "to become soured," or "philistine." Dullness acquired in the long course of monotonous, unstimulating work, or by the atmosphere of a small town, occurs first as a reactive adaptation to the environment, which leads finally, through the co-operation of constitutional inner factors, to a definite loss of personal *élan*, which Möbius termed "physiological imbecility." Möbius believed that these phenomena only occurred in women, and in these soon after the termination of puberty. But, of course, the condition can be observed just as frequently in men if they are at all disposed towards it. Neither is the endocrine chemical process alone to blame, nor solely the "staleness" of professional life. Actually both are closely connected causally, and both together ultimately produce a changed attitude of the total personality, which then becomes unable to respond properly even to a change of environment, however stimulating. In other words, it has become unresponsive to psychotherapy.

What is Personality?

What we call a man's "personality" is merely a fictitious scheme which we can compare with what Schilder (dealing with the physical aspect) has termed "body schema." It is a schematic picture of the position, contours, and functional potentialities of its bodily parts which the ego necessarily visualizes, and which need by no means tally with the material facts and the neurological findings. Pain is felt and localized in the amputated limb just as if it still existed. In the same sense we can speak of the psychic side of a "personality schema."

The personality is not a real, tangible structure of constant properties, but a schematic abstraction of certain typical responsive tendencies, of a group of typical attitudes, trends, and vital aims which a person has hitherto generally exhibited and which one would expect him to exhibit in the future. Both the environment and the person himself contribute to this abstraction.

The fiction of a structural fixed personality has a certain real basis—namely, the hereditary disposition or psychophysical constitution and the manner in which it usually responds to fairly constant environmental conditions. The constancy of both factors, constitution and environment, is responsible for the approximate correspondence between the schema of the personality and reality. But if, for example, environmental conditions change, they can produce reactive potentialities hitherto unrealized in the character picture, and thus give rise to novel transient or permanent character traits. We have only to recall the enormous increase of hysterical reactions in the hospitals during the war, hysterical traits which for the most part would never have declared themselves in an ordinary environment. Conversely, we are reminded of the examples of great spiritual strength which is only evoked by danger or idealistic devotion in persons who are ordinarily shy and timid. One cannot say that the one quality is genuine, the other only fictitious. Both are constitutional reactive potentialities in one and the same person. They only become character traits, however, when they are evoked and maintained by appropriate environmental stimuli.

But in order to maintain the fiction of a static picture of the personality the environmental factor and the constitutional factor must both remain constant. Does not the conception of hereditary disposition and constitution already imply this constancy? What is constant is the germinal disposition, in so far as it includes potentially all behaviour patterns realized in the course of a human life. But they are realized according to the special laws of organism, and not simultaneously and not all permanently. Consider an alarm clock which is set to go off at a certain time; this is a typical example of potential energy which is present from the outset but is only realized for a moment. The same applies to many factors of the germ plasm. The hereditary constitution of a person may, for instance, be so set that at 18 years an attack of schizophrenia, or at 48 a bout of depression, is released. Hence germinal constancy is not the same as vital constancy. This is true not only of pathological hereditary factors but also of the ordinary so-called qualities of character. One cannot say that this man is energetic; we do not know whether he will be so to-morrow. This depends neither on illness nor on old age. In some people the fluid energy oozes away in the ordinary course of events, never to return. The careful observer will frequently be able to detect parallel constitutional fluctuations: changes of weight, of hair-growth, of skin elasticity, of potency.

The imperceptible developmental disorders and losses of vitality are, as soon as one begins to pay attention to them, of fundamental significance in relation to the origin of many neuroses and to the entire field of psychotherapy. So far, then, we can say that the personality schema is consistent, whereas the constitution is more fluid. In other words, the notion which the afflicted person has of himself, of his aims in life, and of his potential activities remains as it was in respect to the demands made on him by his environment. But the constitutional basis of this fictitious ego has slid from under his feet, unknown to himself. He now goes on attempting to respond according to his personality as it was hitherto—that is, within the schema of his formerly typical forms of adaptation to the outside world. At this stage a discrepancy arises between the real and the fictitious personality, together with a maladjustment to the outside world, which favours the genesis of neuroses. Here are a few clinical examples.

Conflict between Real and Fictitious Personality

A woman now 38 years of age wandered from one sanatorium to another, a severe case of hysteria with frequent fits, astasia, and a craving for operation. Formerly she had done social work, and had then gradually given up. Experiential complexes or outside difficulties cannot be considered as causal. On the other hand, the following was ascertained. Coincident with the onset of her hysteria she lost 23 lb. in weight. Judging by earlier photos, her habitus had changed from puffy and pasty to being markedly asthenic. Her hair became prematurely grey. The autonomic nervous system was found to be highly labile, her pulse feeble, and her muscles slack. Had the endogenous change in this woman taken the form of a massive bodily disease she would probably not have developed hysteria, just as the severely wounded soldiers seldom did in the war. The neurosis therefore has the purpose of revealing a genuine, and in this case grave, vital loss of tonus in body and psyche. But it is a loss of vitality which owing to its gradual, insidious nature is unable to fulfil the function which every acute disease immediately fulfils—namely, to act as a signal for the readaptation of the aims of personality in relation to oneself and one's environment.

Our therapeutic task in this case is essentially different from that which one is accustomed to consider as usual in hysteria. First, crude measures, such as simple disciplinary measures and forcefulness, are contraindicated. Attempts of this nature, which do not take into consideration the variation of the constitutional basis, would only tend to deepen the gap between the patient's will and her ability instead of bridging it. Experiential psychoanalysis would also fail, because here the difficulties are not experiential but biological. The treatment should aim at a reconstruction of the personality schema, which is no longer adapted to the new biological situation, and at finding the capacity for performance which is still compatible with the changed constitutional level.

Similar cases, incidentally, can occasionally be observed in women in professional life during and after the climacteric—for example, a partially genuine and serious loss of vital tonus of endocrine origin which takes the form of hysteria because it does not present a big enough front to the outside world. Here is another example:

A 40-year-old teacher was admitted for treatment with litigation mania and hysterical hypochondria. He had been waging a fierce struggle with the authorities and the villagers, who were alleged to be undermining his health and honour and conspiring against his life. Formerly he was a valued teacher and an energetic organizer who helped with youth movements and showed himself well able to battle with the world. The time when these normal conflicts became morbid and delusional coincided with a gradual change of his bodily constitution—namely, a considerable increase in weight with endocrine distribution of fat. His condition was greatly improved by endocrine and dietetic treatment combined with psychotherapy. For more than a year now he has again exercised his profession without disturbance.

Cases of this nature serve to illustrate most clearly the intimate interrelations between endogenous and psychoreactive factors in the personality. The schema of the combative organizing personality, which was well adapted to the original constitution, remains unchanged, whilst the serious constitutional endocrine-determined loss of vitality progressively saps more and more of its foundations. The patient still believes himself to be his former robust self, which he has long ceased to be. Owing to this discrepancy the healthy fighting man develops into the overexcited querulent.

Biological Fluctuations

Many of these biological fluctuations defy detection in the life of average persons because their mechanical routine work discloses little of their actual personality. On the other hand, one is surprised by the frequency and force of these inner changes of vitality in mentally productive individuals, since in their case every activity is borne by the full force of the personality and rises and falls with it. Thus the change from productive to unproductive periods produces a sort of "life curve" which can assume various forms, whether approximating to the undulant "circular type," as for instance with Goethe, or taking the schizophrenia-like form, as with Hölderlin and Uhland, in which a tense mental productivity in puberty is followed by a breakdown, or at least by a certain dryness and dullness. All this can well remain within the framework of biological variation, and need by no means assume the intensity of a psychosis. We can observe in many poets and research workers how some potentialities are only realized in certain, maybe very brief, phases of life remaining purely potential at all other times—inhibited for decades and then bursting forth all of a sudden; or early elation may be followed by utter exhaustion or, after a number of dry monotonous years, revived and pulsating periodically right up to old age. This can only be comprehended in terms of the fluctuations in the deep biological background of the constitution, which bears all outward developments of the personality in its wake and itself is changed.

Thus it can be shown how in the seemingly stabilized zenith of life in full swing, the personality can be affected in the absence of true disease or psychosis, by imperceptible shifts of its endogenous foundations, sometimes by favourable clarification, but sometimes by severe loss of substance. Every shift within what we have described as the constitutional radical of the personality—as, for instance, coloration of mood, impulse, stimulation, inertia—forces even the healthy person to a fundamental revision of his personality schema. When this is not possible on internal and external grounds, then there is always a possibility of psychogenic complications and of abortive attempts at pseudo-adaptation. Here, where the constitution changes and the environment remains constant, the danger of neurosis is just as great as in the far more obvious cases in which much altered environment acts on a constitution that has remained constant, as, for instance, in wars and catastrophes. In both cases the effect is the same—namely, the disturbance of adaptation between a constitution and its surroundings.

Critical Periods

What we have just described occurs most markedly and clearly in those phases of life at which every individual has his critical constitutional turning points; hence, above all, in puberty and during involution. Persons of thoroughly healthy constitution usually pass through these critical periods comparatively smoothly. In puberty, for instance, the psychic changes at the instinctive level harmonize with the process of physical maturation: the detachment from the parents; the gradual fusion of the individual components of the sexual impulse, its control and inhibition. On the basis of this instinctual metamorphosis the entire personality schema, with its performance, aims, ideals, and the demands of the environment, undergoes a parallel and harmonious reconstruction.

Every constitutional disturbance in the course of bodily maturation reveals to the careful critical observer corresponding irregularities in the instinctual metamorphosis. The individual psychosomatic signs of puberty become "asynchronized," no longer combine properly. This in turn results in discrepancies between the radicals and the personality schema, which manifest themselves as ambi-

valent attitudes of the youth towards the most important aims of life and the demands of the environment: again, a lack of balance within the personality and the environment. It is for that reason that disturbed and retarded pubescence gives rise to a number of neuroses in the post-pubertal period, especially between the ages of 20 and 30. I have dwelt on this on a previous occasion.

Conclusions

What bearing has this clinical approach on psychotherapy? The change is just as far-reaching as was that from the suggestive to the analytical method of treatment. At that time it was discovered that the suggestive removal of the neurotic phenomenon was merely a cure on the surface, because hidden behind the neurotic symptoms were emotionally toned experiences which had to be tackled therapeutically. The physician turned from the symptom to the experience. To-day we turn from experience to the personality. Without underrating the part played by certain powerful individual experiences, and, above all, the therapeutic value of an undogmatic experiential analysis, I and my collaborators have come more and more to regard individual experiences, both infantile and current, as only providing characteristic evidence, as though they were milestones marking the personality's path of development.

To-day we have come to recognize as essential the total structure of the personality and its relation to its surroundings *in toto*. Psychogenic tangles occur in the first place when the personality becomes disunited within itself or in relation to its environment—in other words, when the constitution and the personality schema, or the personality and the demands of the outside world, are in conflict. Thus the complicated psychological phenomena of neurosis are ultimately referred back to the clear clinical basis of our established fundamental concepts of natural science, to instinct and constitutional radical, to the problem of the struggle for life and adjustment to the environment.

The function of the physician in dealing with a patient suffering from a psychogenic disorder is therefore to study carefully his present-day constitutional make-up and personality structure in relation to all the significant conditions of his milieu, and to bring them to the consciousness of the patient sympathetically and truthfully. From the existing material, however rich or poor it may be, an in itself intelligible and genuine picture of the personality will have to be constructed and brought into a tolerable relation with the environment, which itself may require to be ameliorated by active interference on the part of the physician. Thus the biological adjustment—in other words, a new and tenable attitude to the struggle of life—is brought into being.

This biological approach can equally legitimately be made to apply to the psychic field. Only thus does the personality in itself acquire ethical value, and only through the elimination of sterile inner friction does it attain its highest efficiency in the service of the community.

The fifth Congress of the Societas Oto-rhino-laryngologica will be held at Bucarest under the presidency of Professor Metzianu on September 16, when papers will be read on indications for operation in acute and chronic mastoiditis, oto-rhino-laryngology in the medicine of to-morrow, a new method of radical operation in otitis media, and surgical diathermy in oto-rhino-laryngology. The subscription is 100 francs. Further information can be obtained from the general secretary, Dr. Chavanne, 5, Place des Cordeliers, Lyons.

THE CHEMICAL DIAGNOSIS OF EARLY PREGNANCY

A METHOD BASED UPON THE DETECTION OF OESTRIOL IN THE URINE

BY

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In a recent article in this *Journal* Crew (1936), when discussing laboratory tests for the early diagnosis of pregnancy, briefly indicated the need for a chemical test, and in mentioning some of the attempts that have been made to devise such a test commented upon their failure to provide trustworthy results. Two types of chemical reaction were specifically cited: (1) the histidine reaction, first introduced as a possible means of pregnancy diagnosis by Voge (1929); and (2) the Visscher and Bowman reaction (1933–4), the basis of which is somewhat obscure. The method of Schmulovitz and Wylie (1935) falls into a slightly different category from the above tests, because it is alleged to be based upon the chemical detection of the oestrogenic hormones which are known to be excreted in greatly increased amounts in pregnancy. It requires a great deal more urine than the other tests and a more complicated technique, but as it appeared to be developed from a sounder basis it was given a short trial in this laboratory. The method was abandoned, however, when it was found that the colours produced were not specific for the oestrin compounds, and, indeed, were far more intense than could possibly result from the hormone content of the extracts from which the colours were developed.

The New Method of Diagnosis

The method about to be described makes use of a similar basis to that which was theoretically adopted by Schmulovitz and Wylie. It is concerned, however, only with the oestriol content of the urine, the oestriol having been shown by Cohen and Marrian (1934) to be the predominating oestrogenic hormone in pregnancy urine, and present to the extent of five to ten times the amount of the associated oestrone. It utilizes, moreover, a more specific reaction for this hormone—namely, the Kober phenolsulphonic colour reaction, which has been so successfully developed by Marrian and his colleagues (1936) for the purpose of the rapid estimation of the oestrin compounds in late pregnancy urine, and also as a guide to their isolation of oestriol glycuronide from the same urine.

Having had considerable experience in the use of this reaction upon extracts from late pregnancy urines, I have attempted to adapt it to early pregnancy, where the amount of available oestriol was of course very much less and the proportion of interfering substances correspondingly greater. As Marrian has shown, the oestriol of pregnancy urine is present in the form of a compound with glycuronic acid, and before the active hormone can be isolated the conjugated form has to be broken down by drastic acid hydrolysis. This preliminary hydrolysis has the effect of markedly increasing the pigmentation of the urine, and certain dark products cannot be wholly eliminated in the course of working up the extracts for the oestriol reaction. In the final stage they give a darkish-brown coloration to the Kober reagent, which in early pregnancy urines completely masks the character-

istic pale red due to the presence of minute quantities of oestriol. Failure to effect sufficient purification of the extracts of these acid-hydrolysed urines by any simple means led to the examination of other methods of accomplishing the breakdown of the glycuronide that would not at the same time introduce such complications as those referred to. Marrian in his work on the hydrolysis of the oestrin compounds showed that the release of the active hormone could also be accomplished by incubation of the urine for fourteen days, thus producing a high degree of putrefaction. As only a relatively slight increase in pigmentation accompanied this putrefactive process it was decided to find out whether the breakdown could be brought about rapidly by utilizing heavy inoculation of the urine with *B. coli* and limiting the incubation period to sixteen hours (or overnight). At first urines containing a great deal of oestrin were examined—namely, those from the later stages of pregnancy—and it was found that the amount of oestriol as ascertained by colorimetric means in extracts from such urine treated bacteriologically was fairly comparable with that in parallel extracts obtained after initial treatment by the Marrian technique of acid hydrolysis.

Two samples were then compared in strictly quantitative manner with regard to the oestriol fraction only, adopting the method of Cohen and Marrian for application to both acid-hydrolysed and bacteriologically treated portions. The results were as follows:

Sample	Acid-hydrolysed	Bacteriologically Treated
	mg. oestriol per 100 c.cm.	mg. oestriol per 100 c.cm.
I	0.77	0.59
II	0.58	0.47

Though these results showed the bacterial hydrolysis to be rather less efficient than the acid hydrolysis, the final extracts from which the colour reaction was developed were entirely colourless in the case of the former procedure, whereas in the other they were a slight brownish yellow, such pigment interfering with the colour tone of the pure oestriol reaction. From the point of view of colorimetric estimation the extracts from the urine treated by bacteria were therefore much more satisfactory. It was obvious that the amount of splitting by the bacterial hydrolysis was sufficient to warrant its trial in the detection of oestriol in the urine in the earliest stages of pregnancy.

From the beginning the results were distinctly encouraging, even on such relatively small quantities as 50 c.cm. of urine, and only occasionally was difficulty encountered in the preparation of satisfactory extracts. Originally the urine after incubation was acidified to Congo-red, then treated with 20 grammes of ammonium sulphate, preparatory to the ether extraction of the hormone. Later it was found that the final extracts were uniformly better if both acidification and ammonium sulphate were dispensed with and direct extraction was made with ether. Even then, however, there was occasionally a trace of contaminating pigment capable of yielding a brownish yellow in the oestriol colour reaction, and this was eventually eliminated by a preliminary treatment of the urine with sodium bisulphite, which reduced the original pigment of the urine by about 50 per cent. and led ultimately to the production of a final extract, which contained practically no interfering substance in the last stage of the test. The detailed technique as finally adopted is described below.

Technique

Urine Sample.—The requirement of the test is a sample of at least 50 c.cm. of early morning concentrated urine, collected into a vessel chemically clean in the sense of being entirely free from all substances which might be inhibitory to bacterial action. It is also advisable that the patient should not have had any drugs for a few days before the collection, for these often increase the pigmentation of the urine, and may also adversely affect the preliminary bacterial hydrolysis.

Preliminary Treatment.—The urine is tested for high acidity by treating a few drops with methyl-red, and if acid to this indicator is adjusted with addition of alkali until it no longer shows a pink colour. A 50 c.cm. sample is then heavily inoculated with *B. coli* and incubated overnight. To the urine after incubation, whilst it is still warm, is added approximately 0.5 gramme of sodium bisulphite. The specimen is shaken until the solid has completely dissolved and then allowed to stand for fifteen minutes.

Extraction.—The partially decolorized urine is transferred to a separatory funnel of about 150 c.cm. capacity and extracted with two lots of 40 c.cm. of ether. Occasionally some emulsification occurs, but this may be rapidly resolved by centrifugation. The combined ether extracts are washed with a little water, and then well shaken with a 30 c.cm. portion of 10 per cent. sodium carbonate. The alkali layer having been discarded, this washing process is repeated until the carbonate layer is completely colourless. The ethereal solution is then again washed with distilled water, and when the water layer has been drawn off the ether layer is further extracted with two lots of 40 c.cm. of N/10 sodium hydroxide. After separation and rejection of the upper ethereal solution the combined alkali portions containing the oestriol are treated with 25 per cent. sulphuric acid drop by drop until acid to Congo-red paper. This acidified aqueous solution is then extracted with two portions of 40 c.cm. of pure "analytical" ether, after which the ether layers are combined and washed with a little water. The ether extract is given another washing with 10 per cent. sodium carbonate, and after the rejection of the alkali the remaining ether is freed from all trace of the alkaline carbonate by two more washings with distilled water. The final clear, colourless ether solution is next transferred in two portions to a 50 c.cm. transparent silica flask and the solvent completely evaporated by immersing the flask in a large beaker of water previously heated to 70° C.; the last traces of moisture are then removed *in vacuo* by direct application of suction to the flask. The dry residue is now ready for the development of the colour reaction, using the phenolsulphonic reagent.

The Reagent.—The reagent used is that recommended by Cohen and Marrian, and consists of 3.6 parts of pure phenol with 5.6 parts of pure concentrated sulphuric acid. Small quantities only are prepared at a time; 9 c.cm. of phenol, liquified by heating, to which are added 14 c.cm. of sulphuric acid with sufficient external cooling to the container to prevent undue rise of temperature, makes a convenient amount. It can then be stored in a 25 c.cm. all-glass burette, fitted with a ground-glass stopper so as to exclude moisture from the reagent. Considerable care must be taken with the reagent, which is very hygroscopic and becomes inactive when it takes up water. In measuring out, therefore, it is important first to discard a volume equal to that portion in the tip of the burette below the stopcock, so that only completely protected reagent is used

for the reaction. Moreover, it is advisable only to use a reagent which is less than one week old.

Colour Reaction.—To the flask containing the dry residue 1 c.cm. of reagent is added from the burette, and the flask then immersed in a large water-bath previously heated to about 70° C. By frequently rotating the flask the whole of the residue distributed round the sides is brought into the reagent, and the temperature of the bath is rapidly raised to boiling point, and kept there for a period of exactly ten minutes. During the boiling period it is again advisable from time to time to rotate the reagent round the sides of the flask. The reagent at this stage has assumed a yellowish colour, and it is now cooled by holding the flask under a stream of tap-water. While this cooling process is going on 1 c.cm. of 5 per cent. sulphuric acid is slowly added, the contents of the flask being kept moving in order to bring the somewhat syrupy reagent into a homogeneous solution with the dilute acid. The product, which is still yellowish, is then reheated in the boiling-water bath for a period of two and a half minutes. A positive reaction is obtained when the original colour gradually changes over to pink or red; a negative when this change is entirely absent.

Results

Altogether sixty-five cases have been tested by this method, not including any of those which were examined in the course of the preliminary work leading up to the adoption of the above technique. In all cases the urines were those submitted for pregnancy diagnosis, so that in no instance was pregnancy established beforehand by clinical examination. The first sixty-three cases have been divided into three groups, and the results are recorded in relation to the time elapsing since the first missed period, where that information is available.

GROUP I.—*Twenty-two Cases in which Pregnancy was Established by the Friedman Reaction, and in which Clinical Details were Furnished with the Specimen, so that the Duration of the Pregnancy could be Determined*

(a) Period 2 weeks overdue .. .. 6 cases
Positive .. .. 5 „ (all reactions were weak)
Doubtfully positive .. .. 1 case

(b) Period 3 weeks overdue .. .. 6 cases
Positive .. .. 5 „
Weakly positive.. .. .. 1 case

(c) Period 4 weeks or more overdue 10 cases
Positive .. .. 10 (all fairly strong)

GROUP II.—*Eleven Cases in which Pregnancy was Excluded by a Negative Friedman Reaction, and in which Similar Clinical Information was Supplied to that given in Group I*

(a) Period 2 weeks overdue .. .. 1 case
Negative .. .. .. 1 „

(b) Period 3 weeks overdue .. .. 3 cases
Negative .. .. .. 3 „

(c) Period 4 weeks or more overdue .. 7 cases
Negative .. .. .. 7 „

GROUP III.—*Thirty Cases Submitted with no Clinical Details*

(a) Pregnancy established by the Friedman reaction .. 18 cases
Oestriol reaction { Positive, 16; Doubtfully positive, 1; Negative, 1

(b) Pregnancy excluded by a negative Friedman reaction, 12 cases
Oestriol reaction .. .. Negative, 12 cases

Since completing the above series two cases became available which gave positive Friedman reactions at a stage when the period was only one week overdue. These were submitted to the chemical test, and one gave a weak but easily recognizable reaction, while the other gave a much stronger positive, comparable to that usually obtained in Group I (*b*).

In the whole series there is only one error arising from the application of the chemical test to early pregnancy diagnosis, so that its accuracy can be said to approach that of the Aschheim-Zondek and Friedman tests. Two cases of doubtful positivity, however, would have required repetition one week later, while, on the other hand, one Friedman test had to be repeated because it gave a very doubtful reaction when the colour test showed a definite positive. The second biological test on a further sample obtained five days later confirmed the accuracy of the chemical diagnosis.

Most of the other tests that have been suggested as a means of pregnancy diagnosis have had the merit of simplicity without that of reliability. With this test the reverse holds, and it leaves something to be desired by way of simplification. However, investigation has shown that none of the steps can be sacrificed without impairing the general efficiency of the process; the only saving that might reasonably be resorted to would be to cut down to a single extraction, using about twice the volume of the extracting medium, those processes where two extractions have been adopted as the standard practice. If consideration, therefore, be made only of the time and labour involved in a single test, then it becomes doubtful whether such technique could find general application to pregnancy diagnosis. However, where larger numbers are concerned and measures are taken to carry out five or six tests simultaneously, the method warrants more serious consideration as a practical alternative to the biological methods. To carry out such simultaneous extractions all that is necessary is the construction of a mechanical shaker to hold a number of separatory funnels.

Advantages and Disadvantages of the Method

At this stage one may conveniently summarize the advantages and disadvantages of the chemical method as compared with the biological tests. In favour of the former it can be pointed out that it enables a result to be obtained in twenty-four hours, whereas the most rapid of the biological tests usually takes forty-eight hours. It dispenses with animals, the upkeep of which is expensive and which are subject to marked individual variation in sensitivity to hormone injection. Moreover, it can make use of specimens that have undergone some degree of putrefaction and have become toxic to test animals.

Its disadvantages are: first, the more laborious technique, and, secondly, that the reactions are rather weak at the stage when the period is only two weeks overdue. There is also the possibility that the chemical test may be, in general, a few days behind the Friedman test in providing positive results in the very earliest stages of pregnancy. This point, however, has not as yet been sufficiently investigated.

Even though, owing to its more tedious procedure, the method might not be adopted as a routine in pregnancy diagnosis, the very fact that it provides a much readier route to the approximate determination of excess of the preponderating oestrogenic hormone than that by way of biological assay would seem to assure to it (or perhaps some slight modification adapted to larger quantities of urine) a role of some practical importance in the field of endocrinology.

Summary

1. A biochemical test for the diagnosis of early pregnancy is described which is based upon bacterial splitting of oestriol glycuronide and the subsequent development of the oestriol colour reaction with phenolsulphonic acid.

2. Urines from sixty-five cases in which pregnancy diagnosis was required have been examined by the test. In all except one case the result was in agreement with that of the Friedman reaction. The advantages and disadvantages of the test as compared with the biological tests are briefly discussed.

In conclusion I have to express my warmest thanks to Messrs. Parke, Davis and Co. for a generous supply of pure crystalline oestriol (theelol), which has been used in this work as the standard control substance. My thanks are also due to Miss I. McPhee for her invaluable assistance in the carrying out of the many extractions, and to Dr. A. R. Berrie and Mr. T. Harvey of the bacteriological department, who kindly undertook the inoculations.

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ATHLETIC INJURIES OF THE KNEE-JOINT, EXCLUDING CARTILAGE INJURIES*

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Of all athletic injuries those of the knee-joint are the most common. They often lead to prolonged unnecessary incapacity and absence from sport, especially if no definite programme of treatment is mapped out from the start. The athlete is usually a sane and sensible person as regards carrying out the treatment of his injuries, provided that the diagnosis, the difficulties of a quick recovery, and an active course of treatment in which his full co-operation is necessary are fully explained to him. Athletic injuries to this joint, as in all other injuries, may be due to: (*a*) direct violence, or (*b*) indirect violence.

Direct violence, such as a fall on the knee, a knock, or a kick, may cause any of the following:

1. A traumatic synovitis.

2. Contusion of the quadriceps muscles or their expansions. In these cases a synovitis of the knee may follow in a few days, either from seeping of blood serum into the joint or irritation of the capsule and synovial membrane by the products of bruising. Efforts are naturally made to prevent this synovitis, but the patient is warned of its possible occurrence.

3. A prepatellar bursitis or bruising of the infrapatellar pad of fat.

4. Fracture of the patella or head of the fibula.

Therefore in cases in which there is tenderness in relation to a bone a radiograph should be taken immediately.

There are four main types of indirect violence:

1. Flexion, usually producing a synovitis.

2. Rotation, which in a mild degree produces a synovitis, but if severe causes cartilage injuries.

3. Lateral wrenches, in which the lateral ligaments are involved.

4. Extension, in which the anterior cruciate ligament, infrapatellar fat and alar folds, as well as the posterior capsular structures, including the popliteus tendon, may be damaged.

Often the injury is due to a combination of two or more of the above.

Before considering in detail each variety of injury let me here stress the importance of giving the patient special instructions as to graduated remedial exercises and simple remedies which he can carry out himself. The patient is warned that at all costs he must avoid undue wasting of the quadriceps muscles and a stiff knee. A scale of graduated exercises starting with those avoiding weight-bearing includes:

1. Twitching and contracting the quadriceps muscles for two minutes every hour while lying on a couch.

2. With the legs dangling over the edge of a couch so that the knees are bent, alternately extending and flexing each knee. This exercise is carried out twice daily, starting with twenty complete movements, increasing by five movements each time.

3. Raising the extended leg by flexing the hip while lying flat; abducting the thigh at the hip and then adducting it. This exercise is designed to bring into action every muscle of the thigh and buttock.

4. Bicycling.

With each exercise the patient should be made to relax completely before starting the movement again, as it is the active contraction of the muscle from its completely relaxed state which is so important. As the patient improves and synovitis disappears graduated weight-bearing exercises can be started—such as:

5. Holding the back of a chair; heel raising and knee bending and straightening.

6. Skipping.

Simple home remedies include:

1. Sponging the knee alternately with hot and cold water, thirty seconds of each for five minutes.

2. Massaging the muscles above the joint with olive or castor oil.

3. The application at night of Scott's dressing, antiphlogistine, or lead and opium.

Let us now consider the various injuries in detail.

Internal Lateral Ligament Strains

The importance of having a clear outlook on these injuries cannot be emphasized too strongly, as they are one of the commonest causes of chronic knee complaints. The injury is caused by an abduction wrench such as takes place in turning while ski-ing, and is so common in Switzerland that it is vulgarly known as the "Swiss kiss." Sometimes rotation occurs in the injury, and an injury to the internal semilunar cartilage complicates the condition. This complication one might expect in mining injuries, but it is my experience that in athletic injuries it is uncommon for internal lateral ligament strains to be associated with cartilage injuries. In those cases though, in which the maximum tenderness is at the middle of the ligament, at or near the point of attachment of the internal cartilage to the deep surface of the ligament, and in which there is limitation of full extension from the start, damage to the cartilage should be considered as a likely complication of the strain.

Usually, however, there is marked tenderness at either its upper or lower attachment—the upper is more common—and external rotation is limited and painful. Sometimes a small flake of bone is separated from the attachment of the ligament to the internal femoral condyle. It is important, therefore, to radiograph all cases at once. The essential point to be sure of is whether extension is limited or not. In the early stages of an uncomplicated

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internal lateral ligament strain we find that extension is not limited. In untreated cases, and in those in which no effort is made to prevent limitation of extension, it will be found that after a week the last five degrees of extension becomes limited and painful. This is due to the fact that injured ligaments always tend to shorten—a pathological principle which at present is apparently not properly understood. Otherwise so many of these cases would not be treated by supporting the ligament in its relaxed position—that is to say, in the case of the internal lateral ligament, supporting the knee in a slightly flexed position. The strong flexor group of muscles, already tending to flex the knee, have thus an added mechanical advantage, and fix the joint by spasm. If this position is maintained for long, secondary contracture of the ligament takes place, due to the formation of granulation tissue in and around it, especially between the ligament and the joint at the back.

For the sake of treatment and prognosis I shall classify these strains in three degrees—mild, moderate, and severe. As a general working rule, even with intensive and properly directed treatment, mild degrees will take at least six days to recover completely, so that the patient is able to carry out full exercises. Moderate degrees take six weeks and severe degrees six months.

Treatment of Mild Degrees

Heat and massage over the ligament and surrounding muscles are started at once. A tendency will be found for the products of bruising to spread down the ligament and around the muscles at the back of the joint. The quadriceps are stimulated by graduated faradic contractions for twenty minutes daily from the beginning, and the constant extension of the knee by these contractions helps to prevent the tendency towards slight flexion of the joint. Gentle daily manipulative movements concentrating on the involuntary joint movements, such as moving the patella from side to side, the tibia forwards on the femur, and rotatory movements within the limits of movement without pain, while tension and countertension are applied, are of great value in that they overcome the spasm of the muscles strapping the inner side of the knee. In addition anodal galvanism or diathermy can be given.

Treatment of Moderate and Severe Cases

Skiagrams may reveal a small flake of bone detached from the surface of the internal condyle, or rupture of the ligament may be suspected by undue lateral mobility of the joint. The knee should be placed in a plaster-of-Paris cast in full extension for a period varying from three days to three weeks according to the degree of injury. A pad of felt is first placed over the length of the internal femoral condyle and the ligament. The cast consists of a back plaster holding the knee in the fully extended position and maintained by two plaster bandages, one above and one below the knee. A third bandage is wound round the knee in a figure-of-eight so as to exert lateral pressure over the pad of felt and the internal lateral ligament. Care is taken to leave the patella free, so that this can be moved from side to side and up and down daily. There is ample space above the top of the plaster in which to stimulate the quadriceps by faradism daily. Unless there is a rupture of the ligament or separation of the flake of bone weight-bearing is allowed and the patient encouraged to contract the quadriceps voluntarily. In this way traumatic effusion is massaged away from the ligament by the firm pressure pad, the tone of the quadriceps is helped, and full extension is maintained.

When the plaster is removed, and for a varying period afterwards, flexion of the knee may be markedly limited and painful, but this will gradually return with remedial exercises, faradic contractions, massage, and gentle manipulative movements. No forced movements should ever be attempted, and a manipulation under an anaesthetic is only justifiable as: (*a*) a diagnostic procedure to rule out an associated misplaced cartilage; and (*b*) in cases of several months' standing, in which all tenderness has disappeared from over the ligament and it is felt that any limitation of joint movement is due to formation of adhesions. Early forcible manipulation in these cases will often only give rise to disappointment and aggravation of the condition. As soon as walking is allowed the tread and heel of the shoe should be raised a quarter of an inch on the inside to prevent strain on the ligament.

Patients with a moderate degree of sprain treated for a short period in plaster have returned to football two weeks after the injury. Comparison with untreated cases and with those treated by other methods show their recovery period to be about one-quarter as long. Severe strains complicated by separation of a flake of bone or rupture of the ligament do take a long time, but recovery is helped by periodic courses of diathermy and faradism. Massage is not given in these cases over the ligament or condyle.

External Lateral Ligament Strains

These are often associated with sprains of the biceps tendon, ilio-tibial band, and external quadriceps expansions, and frequently are due to direct injury. Swelling appears on the outer side of the knee in connexion with the biceps tendon and insertion of the ilio-tibial band and external quadriceps expansion into the external tibial condyle, and is often mistaken for a cystic condition of the external semilunar cartilage.

Treatment consists of heat, massage, graduated faradic contractions, and gentle manipulative movements, to which may be added anodal galvanism or diathermy. Radiographs should exclude a crack in the head of the fibula.

Bruising of Infrapatellar Pads of Fat and Alar Folds

These may be caused by hyperextension or direct violence and give rise to swelling and tenderness below the patella and on each side of the ligamentum patellae. There is limitation of full extension and pain on coming downstairs. Owing to early wasting of the quadriceps often a vicious circle is started, as weakness of the crureus and subcrureus allows further pinching of these structures by not pulling them from between the joint surfaces in full extension. Treatment should consist of deep massage over the pads combined with faradic contractions and anodal galvanism or diathermy with the terminals arranged in an antero-posterior direction.

Often violent hyperextension is associated with strain or rupture of the anterior cruciate ligament and the posterior capsular structures, including the popliteus tendon. If a strained or ruptured cruciate ligament is suspected, as shown by undue forward mobility of the tibia on the femur, the knee should be put in plaster for three weeks—weight-bearing is not allowed, but during this time the quadriceps are treated with faradism. If the structures at the back of the joint are strained the treatment should be divided between the front and back of the joint, and heat, massage, and faradic contractions should be given to the gastrocnemii, popliteus, and hamstring muscles as well.

Synovitis

I have left synovitis to the end intentionally, as it is often a complication of all the preceding conditions; naturally, if present, it should be treated first.

Aspiration of the joint, especially if the effusion be partly haemorrhagic, which it usually is, will give instantaneous relief. Under strict aseptic technique the outer side of the suprapatellar pouch is anaesthetized with 2 c.cm. of 2 per cent. novocain or novutox. Through this anaesthetized area a small scratch is made with a tenotome and a large-bore needle is pushed into the joint and the synovial effusion aspirated. There is no risk attached to this procedure provided it is carried out under conditions of strict asepsis, and it will prevent granular lumps of inspissated blood collecting in the suprapatellar pouch. It is these which so often give rise to adhesions and chronic capsulitis with marked quadriceps wasting. As a result of aspiration and the use of a local anaesthetic there may be slight pain in the joint after about four hours, but by the next day this has passed off and the condition has eased. A slight return of effusion may be expected, and as long as this persists weight-bearing should be avoided, since the synovial membrane is so sensitive and inflamed at this stage that any weight on the joint is apt to produce more effusion and swelling.

As soon as the joint has been aspirated pressure is applied by a firm bandage over lint or wool soaked in lead and opium. The next day treatment consisting of heat, massage, faradic contractions, and gentle manipulative movements is started. If the amount of effusion is small and aspiration is not considered necessary anodal galvanism or diathermy may be added.

The length of time in recovering will vary according to the severity of the synovitis—from a few days to a month—but even the severest degree of traumatic synovitis should have completely cleared up in this time, provided there is no complication such as a lateral ligament strain or cartilage injury. Slow recovery should arouse suspicion of some underlying septic focus, and the patient must be carefully examined to exclude this.

Chronic Knee Strain

There is a type of strain which appears frequently in middle-aged and overweight patients, often following prolonged exercise, such as thirty-six holes of golf or a long day's shooting. Sometimes patients give a history of an old injury to the joint, or the *x* rays may show slight early osteo-arthritic changes. Synovitis is present, the quadriceps are atonic, and the extremes of joint movements may be limited.

Treatment consists of heat, massage, graduated muscular contractions, and the limitation of active exercise until movements and muscle tone return to normal. These cases usually clear up completely at the time, but often tend to relapse and require further treatment some years later. If they are neglected synovial changes occur, the muscles waste further, and definite osteo-arthritis of the joint sets in.

Quadriceps Insufficiency

This condition has long been recognized as a common cause of recurrent synovitis or of an unstable knee. Very often this type of knee is labelled as due to a torn cartilage, but is no better after the cartilage has been removed, since the cause of the condition has not been corrected. Quadriceps insufficiency should be divided into three types, and each type gives rise to different symptoms:

1. Vastus Internus Insufficiency.—Pain and a strained feeling are felt on the inner side of the knee.

2. Crureus and Subcrureus Insufficiency.—Symptoms are referred to the infrapatellar pads and alar folds.

3. Vastus Externus Insufficiency.—This is often associated with a slack ilio-tibial band. Pain and instability of the outer side of the joint may lead to the diagnosis of a damaged external cartilage. Careful examination will reveal in which part of the quadriceps there is most wasting, and every endeavour must be made to correct the wasting by graduated faradic contractions and special exercises.

Frequently quadriceps insufficiency is associated with limitation of movement. If this be so the joint must first be manipulated under full anaesthesia, followed by daily routine treatment. A joint may apparently be free in movement but painful on playing football or running full out. This type of joint is often completely cured by a forcible manipulation.

Conclusion

I will end by stressing the following points:

1. Severe internal lateral ligament strain takes a long time to recover and treatment cannot be forced.

2. Quadriceps insufficiency may be divided into three parts—inner, middle, and external.

3. Remember that Sir Robert Jones emphasized the importance of trying the effect of forcible manipulation on a knee-joint before labelling it functional or before removing a doubtful cartilage injury.

4. Always give the patient remedial exercises to carry out. He then feels that he is taking an active part in his own recovery.

Clinical Memoranda

Expulsion of a Placenta Praevia in Advance of the Foetus

A careful search of the literature has elicited only four references to the expulsion of a placenta praevia in advance of the foetus. On the Continent Magnani (1931), Laviano (1932), and Cambon (1935) have each recorded a case, while in this country Petch (1924) gave details of a case he encountered some thirteen years ago. The last-mentioned, on arriving at his patient's bedside in response to an urgent summons, found the whole placenta lying in the bed and the foetus evidently not yet born. Examination showed that the foetus was occupying a transverse lie. Though the expulsion of the placenta had apparently been preceded by a heavy loss of blood, the patient's condition was good enough to permit of internal version and the pulling down of a leg under anaesthesia. She made a satisfactory recovery.

The placenta in the case which came under my care, and the details of which follow, was noticed, though not recognized as such, by me in process of extrusion, and a minute or so later was seen and recognized without difficulty lying in the bed. I was engaged in washing up in the intervening moments, and I therefore was not actually a witness of its complete birth; but there was certainly a minimal loss of blood accompanying the process or, for that matter, following it.

CASE HISTORY

Mrs. S., aged 29, had had one normal confinement at home in 1931, and a second, also normal, at home in 1934. She had booked a midwife for her third confinement, which was expected to occur in March, 1937, and had not consulted her doctor at all, as she had been in very good health. In the first week of January, 1937, when the pregnancy had reached twenty-eight weeks, a sudden profuse haemorrhage occurred one night, waking the patient up and causing her considerable alarm. By the morning the loss was so small that the patient, though conscious of weakness, did not notify her doctor of what had happened. A fortnight later a second and still more severe haemorrhage occurred, again during the night. This time it was so persistent that the patient, feeling that she could not continue to lose so heavily, sent her husband to the doctor, asking him to arrange for her immediate transfer by ambulance to hospital.

When, therefore, the patient arrived at the hospital in the early morning in a more or less moribund condition she had not been examined by her doctor (by the time he was sent for vaginal examination was contraindicated by the patient's condition and his only course was to act as he did) and was too near death to stand the careful examination necessary to diagnose placenta praevia per vaginam, apart from the danger of aggravating haemorrhage by such a procedure. Abdominal examination revealed only a vertex presentation. Attention for the time being was given entirely to the treatment of the patient's grave general condition. The pulse on admission was almost imperceptible and uncountable, the patient semi-conscious, the respirations sighing, and the skin covered with a cold sweat. The house-surgeon whilst awaiting my arrival gave an intravenous saline with marked improvement in the pulse.

Guided by the lack of any evidence of toxaemia, no oedema, only a slight trace of albumin in a catheter specimen of urine, and by the nature of the haemorrhage—sudden, profuse, and whilst at rest in bed, in an otherwise healthy woman—on my arrival I diagnosed this as a case of placenta praevia.

The pulse rate now was 160 and the patient obviously in a very critical condition from extreme exsanguination. Blood was still trickling slowly from the vagina. Occasional but definite labour pains were occurring, causing further distress. Morphine 1/6 grain was given hypodermically. Arrangements for a blood transfusion were made by the kind co-operation of my colleague Dr. Vaughan Facey, and in the meanwhile a further intravenous saline was given.

It was then that during a pain I looked to see whether there was any further loss per vaginam. Actually I saw the vagina distended by what I took to be a large bag of waters covered with blood clot. I washed up; and on my return to the bedside found the whole placenta lying between the patient's legs. The umbilical cord, as it passed back through the vagina was covered by the membranes, while the maternal surface of the placenta was exposed. The placenta was evidently the object which I had seen in process of expulsion, maternal surface foremost. Its expulsion was not preceded or followed by any increase of haemorrhage.

The blood transfusion was then carried out, and the general condition of the patient, who was now able to take hot drinks, improved visibly. Two hours after the expulsion of the placenta the foetus was born by the vertex easily and without further loss of blood.

The puerperium was complicated by the development of a rather extensive thrombophlebitis of the left leg, but in due course the patient returned home in good health.

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Reviews

CLINICAL PATHOLOGY

Clinical Laboratory Diagnosis. By Samuel A. Levinson, M.S., M.D., and Robert P. MacFate, Ch.E., M.S. (Pp. 877; 144 figures, 13 plates. 45s. net.) London: H. Kimpton. 1937.

There is no dearth of "bench-books" designed as a guide to the examination of morbid material, and any new work of this kind, apart from the ephemeral advantage of being fully up to date in a constantly expanding subject, is likely to depend for success on some new feature or method of presentation. Levinson and MacFate's *Clinical Laboratory Diagnosis* differs from many similar books in being widely comprehensive both in aim and in presentation; it is a practical textbook on chemical pathology, haematology, bacteriology, and parasitology, and even toxicology, and thus provides information on every kind of procedure likely to be necessary in examining pathological specimens. The main chapters deal each with one of the body fluids and with its examination from all these standpoints, and each concludes with a description of the principal diseases in which abnormal findings may be expected. Technique is fully described, including the composition of all reagents used. Other chapters deal with skin tests, the special procedures required and the differences in results to be expected in children, milk and water examinations, histological technique, the detection of poisons, and a complete programme for conducting a class in clinical pathology.

As a book of reference providing instruction in methods with which the worker may be unfamiliar this will be of great value. As a general guide in education or routine work it may be found to have certain disadvantages. On the all-important question of interpretation, and in particular on the difficult decision whether given cytological and bacteriological findings indicate the existence of infection, much more might have been said, and to the same end a chapter on the normal body flora would have been helpful. There is also what may be called a rule-of-thumb tendency which we deprecate; why, for instance, should it be laid down in the table of appropriate culture media on page 547 that material from certain parts of the body, including the throat, eye, and peritoneal cavity, should be cultivated in a medium containing brain? The choice of medium depends, not on the source of the specimen, but on the infection suspected. The list of "Common Infectious Diseases and the Causative Organisms" in the same chapter illustrates the same attitude; two bacteria in each case are given as the common causes of asthma, bronchitis, empyema, acute endocarditis, and pericarditis; while to include headings such as abscess, inflammation, and ulcer in this list, following them with the mention of one or two common bacteria, serves no useful purpose. This section includes statements that "duodenal and gastric ulcers are due to streptococci" and that "mycosis intestinalis" is caused by *Bacillus anthracis*. The besetting sin in clinical pathology is the too ready attribution of disease to bacteria of doubtful significance, as in the former statement, and the general adoption of a much more critical attitude is highly to be desired. This criticism does not detract from the value of the book as a technical guide, and we can commend it as a source of information otherwise only to be obtained from works on several different branches of applied pathology.

DIET FOR DIABETICS

Diets and Recipes and the Treatment of Diabetes and Obesity. By E. P. Poulton, M.A., D.M., F.R.C.P. (Pp. 121. 7s. 6d. net.) London: H. Milford, Oxford University Press. 1937.

Dr. Poulton has written a book full of practical facts and food tables which he has found useful in the treatment of diabetes. The book is almost entirely concerned with diabetes, and diet in obesity is dealt with far too shortly in only two pages. The author uses high carbohydrate diets with moderate protein and fat and advocates the total weighing of the diet. In diet arrangement he has created a "carbohydrate ration" of 20 grammes carbohydrate, and uses varying ratios of carbohydrate to fat of from 1 to 2 to 6 to 1. His fat ration contains 10 grammes of fat. But in both C. and F. food values he also gives lists of half rations. These two different "rations" seem unnecessary and are apt to confuse, because anyone who is capable and likely to weigh his diet is also able to multiply or divide by two. Thus one single "ration" of C. and F. would be less confusing.

The recipes are extremely well arranged and indexed, and ought to be very welcome to patients. (They have been published separately under the title *Diets and Recipes* by Milford at 1s. 6d.) Useful chapters on vitamins and mineral metabolism are also included. The footnote on page 76 is rather surprising and its meaning obscure. In Table 8 bovril and oxo have been included, quite rightly, among articles of "negligible food value," but the footnote apologizes for this and says that "extras of small calorie value" is a better description. Why, we wonder, apart from the manufacturers' susceptibilities?

STOMACH LESIONS OF SYPHILITICS

Les Gastropathies des Syphilitiques. By Carlos Bonorino Udaondo. (Pp. 216; 19 figures. 32 fr.) Paris: Masson et Cie. 1936.

In this interesting monograph Professor Udaondo has brought together the literature on the subject of gastric lesions in syphilitics. Medical teaching in the matter has varied greatly over the years. In 1891 Chiari of Prague summarized the views of the time by asserting that lesions of the stomach may be provoked by syphilis, directly or indirectly. The direct lesions are rare, gummata and inflammatory infiltrations, usually in the submucosa; by fusion of gummata and the action of the gastric juice syphilitic ulcers may be formed, followed by scarring after healing occurs. The indirect lesions are due to alteration of the circulation following hepatic disease or to haemorrhages. The next step was to find the treponema in sections of the stomach obtained by operation or at necropsy. Technical difficulties have prevented much progress on these lines, and the therapeutic test of improvement under specific treatment which has been adopted clinically in diagnosis is under criticism. It is recognized, however, that lesions which are probably syphilitic may occur in the stomach—gummatous ulcers, a form of linitis plastica and hypertrophic gastritis—though there appears to be no consensus of opinion about the criteria necessary to establish the diagnosis. These lesions may occur in a patient with syphilis, and sections of the stomach wall must show gummata or syphilitic involvement of the submucous blood vessels.

Syphilitic lesions of the stomach have no characteristic which is an infallible guide in diagnosis. Gastric disturbances may also arise in patients with neurosyphilis. The therapeutic test is fallacious, though sometimes a most brilliant restoration clinically and radiologically may follow effective treatment.

DIAGNOSIS AND TREATMENT OF ORAL DISEASE

Oral Diagnosis and Treatment Planning. A Textbook for Students and Practitioners of Dentistry and Medicine. Edited by Samuel Charles Miller, D.D.S. (Pp. 620; 562 figures, including 15 colour plates. 30s.) London: J. and A. Churchill. 1937.

Under the editorship of Dr. S. C. Miller of the New York University College of Dentistry, twenty-two specialists have contributed the twenty-six chapters of which this book is composed. In a short preface the editor defends the multiplicity of contributors on the ground that "the magnitude of the subject made it impossible for any one mind to encompass it fully and properly"—a statement which might well make a student despair of ever mastering the intricacies of his profession; and, indeed, we cannot help thinking the book is over-specialized. However this may be, it contains a great deal of interesting matter. We note, as illustrative, a case of congenital diabetes showing extensive (pyorrhoeic) destruction of the alveolar bone in a child of 14 (p. 2); the daily progress of tongue cleaning in scarlet fever (p. 52); examples of cavernous sinus thrombosis following dental operations, one a case of "pulp-capping" (p. 200); a figure showing the solvent effects of fruit juice on the teeth (p. 263); and the description of "odontoclasia" as a special form of caries (p. 65).

With regard to the various subdivisions of the book, we note their comprehensive nature—for example, the chapter on diseases of the oral mucous membranes—and perhaps over-comprehensiveness, as in the list of habits that cause periodontal disease. The chapter on diagnosis for bridge work and bridge design is a thoughtful presentation of the possibilities of clean and aesthetic bridge work; that on the diagnosis of abnormalities of the temporo-mandibular articulation shows that the radiologist is obtaining considerable success in his attack on the difficult problem of making radiographs of that joint (we cannot see the "sloughing projection" in Fig. 10 (8)). The chapter on methods of laboratory diagnosis available to the dentist indicates how far dentistry has travelled since the days when it was a purely mechanical art; as Allen F. Newman says in his preface: "The dentist's responsibility, at present, is one of health service." We find the chapter on head pain hard to digest, and would like to see it presented in clearer form; and we wonder whether "cementoma" is the right word to apply to bone rarefaction on page 447, Fig. 7 (23).

IN PRAISE OF TEA

Opuscula Selecta Neerlandicorum de Arte Medica. Vol. XIV. Edited by M. A. Van Andel. (Pp. 465; illustrated.) Amstelodami Sumptibus Societatis. 1937.

The *Nederlandsch Tijdschrift voor Geneeskunde* was established to keep green the memory of little-known Dutch physicians who have deserved well of their country. This, the fourteenth volume of the *Opuscula Selecta*, like its fellows, is a monument of erudition and is well illustrated. Dr. Willem Piso is the first to be considered. He lived from 1611 to 1678, and went to Brazil as physician in the train of General Maurits of Nassau, who was appointed Governor of Brazil in 1636. Piso learnt the value of ipecacuanha in the treatment of diarrhoea and dysentery. No portrait of him has been traced hitherto, but Professor van Andel, who writes an introduction to his work, reproduces a miniature which he says, cautiously, he will not guarantee. The second article tells of Dr. Ten Rhyne (b. 1649). He published a valuable treatise on Asiatic leprosy, having gained an extensive knowledge of the disease whilst serving in Batavia. Dr. Schoute says in his

introductory notice that the remarks on the diagnosis of the disease and on the symptoms of its earliest stages are especially valuable.

The last three hundred pages of the volume consist of a reprint of the *Treatise about the most excellent herb Tea* by Dr. Cornelis Bontekoe (1647–85), which was printed at The Hague in the year 1678. The whole treatise is excellent reading. Dr. Bontekoe approaches his subject with a diatribe on contemporary doctors and an essay on good living, via Predestination to Life. Having thus proved himself to be a master of vituperation and a sound Calvinist, he proceeds to consider the effects of "tea water" on the different organs of the body and its value on the social customs of the Dutch in general. It is amusing though it is written in all soberness, and would have gladdened the heart of Dr. Johnson, for he says: "I have no scruple in advising [people] to drink fifty or a hundred or two hundred cups at a time. I have often drunk as many in a fore- or afternoon, and many people with me, of whom not a single one has died yet. But I do not think that anyone need imitate this. I only alledge it to show there is no harm in tea, so there is no reason to be afraid of drinking ten or twenty cups; it is not like wine or beer, which go to the head as the saying is." Dr. de Feyfer, who writes an introduction, points out that Bontekoe was hated very heartily by his contemporaries, who attributed his enthusiasm for tea to money supplied by the East India Company in return for propaganda which filled their coffers.

The volume as usual is printed in Dutch with an English translation on each opposite page. The English is idiomatic, and except in a few minor instances is accurate.

PHYSICAL PHILOSOPHY AND BIOLOGICAL PROBLEMS

Biology and the New Physics. A Plea for a Consistent Philosophy of Life. By C. J. Bond, C.M.G., F.R.C.S., F.L.S. (Cloth 2s. 6d. net; paper cover 1s. 6d. net.) London: H. K. Lewis and Co., Ltd. 1936.

There is no dearth of books explaining the modern conceptions of physics, but most of them are written by physicists and astronomers, and though the authors occasionally deal with biological problems, these excursions into unfamiliar territory are seldom happy, since they usually result in special prominence being given to highly doubtful experimental results. Biologists, on the other hand, have shown themselves averse to considering the implications of the recent advances in physics. This aversion has a simple historical explanation, because the whole advance of the biological sciences during the past century depended on the abandonment of the old vague vitalistic ideas and the interpretation of the obscure phenomena presented by living matter by means of the known laws of chemistry and physics. This method has yielded wonderful results, and biologists naturally cherish the belief that the same method if pressed far enough will solve the ultimate problems of the nature of life and evolution. They naturally find it disconcerting to be informed by physicists that the fundamental laws on which the whole structure of biological science has been based merely express statistical probabilities, and give little information regarding individual behaviour. Those subjects which have the smallest quantity of accurate data cherish their scanty possessions the most jealously, and it would seem possible that in the future the biological sciences may form the last home of pure determinism. For these reasons it is interesting to read an estimate of the effect of the changes in physical philosophy on the fundamental problems of biology written by one whose life experience has been concerned with biological material. Such a survey has been provided in the short volume entitled *Biology and the New Physics*, which contains an account of the presidential lecture delivered by Mr. C. J. Bond at the centenary meeting of the Leicester Literary and Philosophical Society. The range covered by the author is most simply indicated by his chapter headings: The atomic world, the inconceivably small; the astronomic sphere, the inconceivably vast; life and mind; the method of evolution; the existence of evil.

The author gives in less than 70 pages a bird's-eye survey of the salient features of a vast territory, and finally considers what help such a survey provides for the framing of a consistent philosophy of life. The consideration of this range of knowledge in this space may seem to some an unwarrantable audacity, but it must be remembered that most of the fundamental problems of life can be presented in a sentence and answered in a word, and the fact that mankind has quarrelled for thousands of years as to when the word should be yes and when no does not affect the simplicity of the problem that must finally be faced in each case. The general line of thought followed by the author is indicated by the following sentence:

> "This capacity for organization or arrangement of units which is associated with an entity or organism when functioning as a whole seems to depend on a basis of indeterminacy and, as we have already seen, from embryological, ontological, and other evidence, the organizing process itself seems to employ the experimental method."

Notes on Books

For its second edition the textbook on *The Diseases of Infants and Childhood*, by Professor J. P. CROZER GRIFFITH and Professor A. GRAEME MITCHELL, has not only been entirely revised and reset, but it is now issued in one volume instead of two. This has called for a certain amount of rearrangement. Material which may not be needed by the student in his daily work has been put into small type. References are now included at the end of each chapter, and these bibliographical summaries are a valuable part of the book. As with the first edition, this new version can be thoroughly recommended as a first-rate textbook on the subject of paediatrics. It is published by W. B. Saunders Co. at 42s.

The Lung, by WILLIAM SNOW MILLER (Baillière, Tindall and Cox, 34s.), would deserve high praise for the illustrations alone, of which many are original, and no fewer than twenty are coloured. But in addition the author writes with the experience behind him of forty-seven years' study of lung structure. This no doubt also accounts for a conciseness of style that has enabled an enormous amount of information to be included in comparatively little text without danger of straining the reader's attention. But let it be said at once, the book is mainly for the anatomy specialist. The clinician will miss that association of structure with function and disease which enables him to apply the information gained from the basic medical sciences to his daily work. The first chapter describes the gross anatomy of the lungs. The second and third, on the trachea and bronchi and on the intrapulmonary bronchi and bronchioli, contain the author's interesting reconstructions of carinal cartilages, the trachealis muscle, and of bronchial muscle. The fourth chapter describes in detail the air spaces, and gives the author's original models showing the existence of atria. The next four are devoted to the blood vessels, the lymphatics, the lymphoid tissue, and the nerves respectively. In another chapter is discussed the pleura, followed by a unique discussion of the architecture of the lung in terms

of key points—points where certain structures are constantly found. Finally Dr. Miller, in a historical sketch, traces the views that have been held by various authors on the arrangement of the air spaces from the seventeenth century to the present day.

Some readers may be glad to know of a clearly written little book *Business Affairs and Book-Keeping* by WINIFRED E. GILL, B.Sc. (Longmans, Green and Co.; 3s. 6d.). Part I, on business affairs, deals in turn with money and banking, law of master and servant, insurance, rates and taxes, law of landlord and tenant, and office management. Part II gives practical instruction in book-keeping, with special reference to household management.

Medical Harrovians will like to hear of the appearance of a fifth edition of the *Harrow School Register* (Longmans, Green and Co.). This covers a period of ninety years of admissions to the school and is divided into two volumes, one for 1845–1898, the other for 1899–1937. The editor is Mr. John H. Stogdon, and the head master contributes a preface. The price of each volume is 15s. 6d.

Preparations and Appliances

NEW SYRINGE FOR INTRAVENOUS INJECTION

Dr. MASSEY DAWKINS (London, N.W.3) writes:

I have found the syringe shown in the accompanying figure invaluable for giving intravenous anaesthetics, or indeed for any intravenous injection. It is a modification of the ordinary 10 c.cm. Record syringe, but the piston rod has been extended and fitted with a spring. The spring tends to withdraw the

piston, but can be fixed in any given position by means of an annular catch, which can be put out of action by depressing it with the thumb. In practice the catch is depressed and the piston automatically withdraws the anaesthetic solution from the ampoule. When the amount to be injected has been decided the catch is set for that amount. The needle is then pushed into the arm and the catch released; it will then be found that the piston will not suck back until the vein is entered, since, if the needle is outside the vein, the surrounding tissue is sucked against the bevel of the needle and the piston remains stationary. Thus it is almost impossible to give a perivenous injection. A further advantage of this syringe is that the whole procedure can be effected with one hand. This instrument has been made for me by Messrs. A. Charles King Limited, 34, Devonshire Street, W.1.

REVERSIBLE PELVIC CURVE FORCEPS

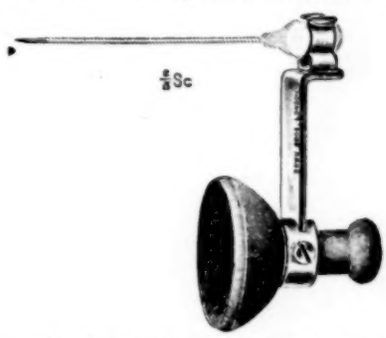
Dr. DAVID PRICE (Somerset) writes: Delay in the second stage of labour, with consequent maternal exhaustion, can be terminated safely by the use of reversible pelvic curve forceps, which enable one to rotate the foetal head without damage to maternal tissues and extract it without removal of the

blades (a process necessary in the existing rigid types of midwifery forceps, and involving much manipulation and often return of the foetal head to its occipito-posterior position). When there is delay in the second stage and a large caput it is not easy to diagnose the position of the occiput. I apply the forceps and make traction; if that "no advance" feeling ensues, I press upwards and try rotation in the easiest direction. If no rotation is easily obtained a manual examination is made, but it is surprising how often easy rotation is accomplished. The handles then swing on their hinges well forward, and extraction is accomplished by one steady pull. The degree of tension of the hinges can be controlled by a turn-screw. I find that if one can reverse the curve by a sharp jerk the tension is about the best for application. Experience of the use of this instrument has proved other advantages: (1) application of the second blade in any maternal position is easy; (2) the blades find the easiest route into position for locking without force; (3) there is a minimum of pressure signs upon the scalp and face even after a difficult extraction. The instrument is made for me by Messrs. Allen and Hanburys Ltd. of London, E.2.

NEEDLE HOLDER FOR THORACOCENTESIS

Dr. M. W. LLOYD OWEN, M.B. (London, W.2), writes:

In aspirating fluid from the chest it is often found that the needle will not stay in the position inserted at right angles



to the chest wall. When the aspiration is being performed with a two-way syringe the needle has to be held in position by an assistant. The necessity for an assistant can be overcome by the use of a simple but effective sucker apparatus with a metal needle attachment which keeps the needle in the desired position. It sometimes happens that the sucker part of the apparatus will not adhere properly in those patients with rather prominent ribs, but this difficulty can be overcome by moistening the sucker a little before applying it to the chest wall. The instrument has been made for me by Messrs. Down Bros. of London, from whom it can be obtained.

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SOME PROBLEMS OF THORACOPLASTY

The principles underlying the treatment of pulmonary tuberculosis by thoracoplasty have within recent months been the subject of comment in these columns.[1] In his admirable survey before the Tuberculosis Association Mr. George Mason stressed[2] a difficulty which arises with this operation—namely, that of keeping the "filleted" chest wall adequately immobilized. In view of this and the enormous rise in operative mortality among patients who do not fulfil the high standards of the ideal indication, the following conclusion of Mr. Mason's should be treated with caution: "The limitation of our activities to favourable cases, although good for our statistics, would be a cowardly desertion of those numerous cases for whom the operation offers the only prospect of recovery." At all events, the advice contained in it should be followed only by surgeons with much experience of thoracoplasty, and only after careful consultation with a tuberculosis physician who has had the patient under observation for a long time.

The patient to whom thoracoplasty is suggested has the right to ask three questions which the medical attendant must be prepared to answer. (1) How long am I likely to live if I do not submit to the operation? (2) What is the risk of my dying from the operation? (3) If I get over the operation what are my chances of being completely cured? Reliable statistics have been published from abroad giving the average length of life of the patient with chronic pulmonary tuberculosis with cavitation for which thoracoplasty is recommended. It is, however, only an "average," and many factors determine the length of life, such as the patient's general and psychological condition and his economic and social environment. The patient himself is apt to accept the more optimistic of the two extremes on which the average is based, and the answers to the last two questions must therefore compare favourably with this optimistic assumption. It is not enough to give an operative mortality of "only" 15 per cent. and a cure of 10 to 20 per cent. on the ground that the outlook is "otherwise hopeless." The figure of operative mortality varies greatly in different statistics. Among the most favourable is that of Archibald in 1927—about 4 per cent. in "favourable" and "doubtful" cases. In the recently published analysis of all the thoracoplasties done at the Brompton Hospital since 1922[3] the operative deaths amount to 14.6 per cent. This figure is on the high side, but it would be unfair to make comparisons with the figures of other workers, owing to the difficulty of obtaining a standard for the term "operative mortality," apparently used by some surgeons with much elasticity. Another result of importance is the percentage of "practical cures," "returned to work," or "living and well" in the survivors. Sellors in 1933 collected 3,500 cases from various sources: 45 per cent. of these had returned to work. In 1927 Archibald had "practical cures" in 66 per cent. of "favourable" cases and 38 per cent. in "doubtful" cases. Gravesen in 1930 claimed 42 per cent. cures. Sauerbruch in 1935 stated[4] that until recent years the number of permanent cures in his clinics amounted to 70 to 80 per cent.: "the average case operated on being of a poorer type, this percentage is not now so high; it is still, however, 40.6 per cent." Of the 437 patients operated on at the Brompton Hospital between 1922 and 1935 only 14.9 per cent. are in the category "living and well." The term implies that "he or she is living and has lived for at least one year the ordinary life of his or her particular class, and if this involves working, as in the vast majority of cases it does, that he or she is working full time; and, secondly, that there are no symptoms whatever attributable to pulmonary tuberculosis." Is this great difference to be attributed merely to dissimilarity in definition? No doubt the staff at Brompton will soon elucidate this problem, and a fuller report will be of great interest.

In the meantime it is permissible to speculate on the factors that determine the number of cures. As none but highly skilled surgeons would attempt the operation, technical operative skill can be a factor of only minor importance. Four other factors must, however, be considered, each of which might influence either or both the operative mortality and the percentage of cures. In the selection of patients the general condition will undoubtedly affect the former, but an ultimate cure is more likely to be determined by the type of lesion in the lung. Considerations of the fitness of the patient for an operation have perhaps tended to obscure

[1] *British Medical Journal*, 1936, **2**, 286.
[2] *Tubercle*, 1937, **18**, 255.
[3] *Brompton Hosp. Rep.*, 1936, **5**, 102.
[4] *Lancet*, 1936, **2**, 723.

the importance of detailed investigation of the cavity to be collapsed, and existing methods—tomography, kymography, and bronchography—have not been made full use of. It is possible to overlook the fact that some cavities will not close completely whatever the type of thoracoplasty performed. Perhaps this would be better realized if there were more opportunity of examining the lungs of people dying of pulmonary tuberculosis. There can be no question that the type of operation is intimately related to the end-results, as recent discussions have shown. But these discussions have unfortunately also produced no consensus of opinion.

Whereas some surgeons would favour the partial operation whenever possible, others maintain that the complete operation is more likely to prevent relapse. Though some now insist that complete collapse of the upper lobe can often be obtained only if the rib resection is associated with an extrafascial apicolysis, others argue that the paravertebral operation properly carried out does all that is needed. But apart from this it should be stressed that the aim of a thoracoplasty should be to render the sputum negative, as determined by culture and, if necessary, by examination of the gastric contents. If that result is not obtained further operative procedures must be considered, even at the risk of increasing the total operative mortality. It is probable that these supplementary operations are often done in Sauerbruch's clinics and may account for his high proportion of cures. Finally, the social and economic status of the patients in any series must be taken into consideration in comparing results, since " after-care " plays an important part. This factor alone would favour greatly Gravesen's figures as compared with those at the Brompton Hospital. Thoracoplasty is a confession of therapeutic failure. Indeed this is true of much of the surgery of chronic conditions. But in view of the present state of tuberculosis control the usefulness of the operation has not yet reached its peak.

WORLD-WIDE PREVALENCE OF ACUTE POLIOMYELITIS

Simultaneous reports of a high incidence of poliomyelitis in several countries far apart may well cause health authorities in this country to wonder when our customary sporadic cases in autumn each year are to become a major epidemic. In recent weeks in Melbourne alone 185 cases have been reported, with thirteen deaths, of which four were in adults. The Australian outbreak appeared first in Victoria, and steps were taken to prevent the entry of children without a medical certificate of twenty-one days' isolation into New South Wales by means of a police patrol along the border, but despite every measure the disease has secured a firm hold in Melbourne and shows no sign of abating. The epidemic now raging in Chicago appears to have originated in the return to the city of school children from summer camps, where the disease had been prevalent for some time. The chief administrative action taken by the Board of Health has been to postpone the reopening of the public schools and parish schools until the outbreak has terminated, or, at least, until the number of fresh cases has appreciably diminished. In August a total of 109 cases were reported, which is ten higher than that of the record month in the 1916-17 epidemic. Almost simultaneously Ontario has been experiencing the worst epidemic of poliomyelitis in its history; so far the number of cases reported has reached 700, of which the majority are in Toronto. Here, too, the chief single measure adopted by the health authorities has been to defer the reopening of the schools after the summer holidays. The only European country to suffer from a severe visitation of poliomyelitis in recent years has been Denmark, particularly in 1934. At present there is a considerable prevalence of the disease both in Copenhagen and in country districts, but, on immunological grounds, it is unlikely that a large epidemic will follow.

Some lessons in poliomyelitis control may be learned from the experience of Manitoba, which has been fully described in a report[1] on the epidemic in 1936 in that Province. While it proved to be the largest epidemic in its history with a case rate of 75.7 per 100,000 of the population, it was relatively mild in comparison with the Danish epidemic of 1934, with a rate of 124.9 per 100,000. It is noteworthy that the incidence in Manitoba was twice as high in the rural areas as in certain urban districts (notably Winnipeg, which is the largest urban centre); the explanation is probably to be found in the fact that Winnipeg experienced an outbreak of considerable size in 1928, at a time when the rural areas mostly escaped. While the highest incidence fell on the 5-10 years age group, the case fatality was greatest at ages 15 to 19 years. In all, there were 539 cases with a case fatality of 6.1 per cent. In 57 homes (12 per cent.) more than one case occurred in the family, accounting for nearly 25 per cent. of the total. In agreement with general experience, an increasing proportion of cases were diagnosed in the pre-paralytic stage as the epidemic progressed, due to the fact that both

[1] *Can. publ. Hlth. J.*, 1937, **27**, 363.

the general public and the medical profession became "poliomyelitis-conscious," while the case fatality fell steeply. It is only natural to ascribe this lowering of fatality to immune serum whenever it is administered, but it is common knowledge that a like fall frequently occurs whether serum is given or withheld. The conclusion that the favourable results described are due to intramuscular inoculation of 20 c.cm. of immune poliomyelitis serum must be accepted with considerable reserve, particularly in view of the fact that a positive diagnosis of poliomyelitis was frequently made on the finding of headache, fever, gastric upset, irritability, and stiffness of the neck or back, without investigation of the cerebrospinal fluid. Indeed, the findings in the cerebrospinal fluid were often observed to be equivocal; of 170 fluids examined, 22 per cent. had less than ten cells per c.cm. Immune serum does not appear to have been employed in passive immunization of contacts, probably because of lack of supplies; nasal sprays of picric acid solution, such as have been previously described in these columns,[2] appear to have been widely employed, but the authors of the Manitoba report give no details of cases and make no comment on its efficacy. On the whole, the authorities concerned were satisfied that the prophylactic and curative measures they employed were effective in checking the disease or, at least, in averting its worst consequences.

BOECK'S SARCOID

Because of some histological resemblance to sarcoma, Boeck in 1899 designated as multiple benign sarcoid of the skin the condition which Besnier had described as lupus pernio. In addition to the skin lesion these earlier workers noted that lymph nodes, mucous membranes, bones, and internal organs might be involved, and on the basis of this recognition, as also on the supposition that the lesion was tuberculous in origin, Boeck suggested later the name "benign miliar-lupoid." While the dermatologists were concentrating on their special aspects of this problem, radiologists were reporting unusual changes in the bones of the hands and feet, which Kreibech in 1904 definitely associated with lupus pernio. It was, however, not till 1920, when Jüngling gave a detailed description of these bone changes, that their nature was clearly appreciated; and eight years later this observer recognized that the condition he had described as ostitis tuberculosa multiplex cystica had indeed a close association with the cutaneous and glandular affection known as Boeck's sarcoid and lupus pernio. In the meantime Schaumann had made extensive studies of the glandular part of these associated lesions. He concluded that the affection was a generalized lesion of the reticulo-endothelial system, and because of its superficial resemblance to Hodgkin's disease he named it benign lymphogranulomatosis, believing that the affection ran a mild course and, further, holding that it was tuberculous in origin. From the voluminous literature on the subject (Kissmeyer in 1932 reviewed 200 cases) it appears that the affection is one that starts in early adult life. The progress is insidious; finally the disease produces obvious changes, most often in the skin, in the lymph nodes, in the bones of the hands and feet, or in the lungs. In a few instances the earliest pronounced symptoms were referable to the lungs. The mucous membrane of the nose, the nasopharynx, the larynx, and the conjunctiva may be involved, and the tonsils are not infrequently affected. Ocular complications in the form of bilateral iridocyclitis are being reported with increasing frequency. The unity of these diffuse manifestations lies in the characteristic histological appearance of large, palely staining epithelioid cells arranged in the form of miliary tubercles, sometimes lying as isolated structures in a comparatively normal tissue and sometimes occurring in groups or strands. These collections of cells may become so large as to replace most of the normal tissue. They are not outlined by an inflammatory zone of lymphoid cells; in fact, the absence of inflammatory reaction in the surrounding tissue is a characteristic feature. Although mild necrosis of some central cells may be present, caseation is always absent and healing may occur through fibrosis. Longscope and Pierson,[1] in an excellent survey of the subject, report eight cases of their own, and suggest that uveo-parotid fever, with its involvement of lymph nodes and uveitis, should be regarded as yet another manifestation of Boeck's sarcoid. In one of their cases with involvement of the lung there were bilateral iridocyclitis and swelling of the parotid gland; histological sections of a lymph node and of the parotid showed lesions of the type of Boeck's sarcoid. They quote two other cases recently recorded by W. J. B. Slot which have a similar association. In a study on the clinical and histological similarity of Boeck's sarcoid and uveo-parotid fever T. K. With[2] urges the same unifying conception. Additional evidence on the same lines comes from a newly reported case of uveo-parotid fever by W. C. Thompson.[3] In all these discussions the question of tuberculosis looms large. Schaumann,[4] who has studied deeply the general aspect of the affection, believes, as already noted, that it is a mild tuberculosis. On the other hand, dermatologists have been impressed by the similarity of the bone changes to those seen in leprosy, and Jordon and Osborne[5] uphold the dual aetiology, both tuberculosis and leprosy, in a full account of the affection given from the dermatological aspect. Longscope and Pierson cautiously conclude that the aetiology is undetermined; they are not impressed by the evidence brought forward in favour of tuberculosis. Boeck's sarcoid is, of course, not the only dermatological condition that of late years has been shown to have general implications. The conception of tuberosclerosis with its widespread cerebral involvements

[1] *British Medical Journal*, 1937, **1**, 1126.

[1] *Johns Hopk. Hosp. Bull.*, 1937, **60**, 223.
[2] *Acta Ophthal.*, 1937, **15**, 104.
[3] *Arch. intern. Med.*, 1937, **59**, 646.
[4] *Brit. J. Derm. Syph.*, 1936, **48**, 399.
[5] *Arch. Derm. Syph.*, Chicago, 1937, **35**, 662.

arose out of Pringle's adenoma sebaceum, and what appears to be another association is reported by Albright, Butler, Hampton, and Smith[6] in a recent issue of the *New England Journal of Medicine*. They describe five cases of their own and draw on ill-defined cases from the literature to illustrate what they consider a new syndrome characterized by: (1) areas of pigmentation on the skin; (2) multiple bone cysts, frequently localized to one bone, having the features of osteitis fibrosa; (3) precocious puberty in females, but apparently not in males. This association of skin and bone lesions has some superficial resemblance to the associations of Boeck's sarcoid, but their histology and course appear to be wholly different.

ALCOHOL AND MOTOR ACCIDENTS

Estimations of blood alcohol have been used for several years in Sweden as a legal test of alcoholism in motorists involved in accidents. The method has been adopted in Germany, and Dr. K. Hoffmann has published a review of the results obtained during the past four years.[1] His report deals with several thousand tests of blood taken from motor-car drivers. The results of clinical and chemical examinations of about 2,500 cases are set out in a table. The clinical examination divided the cases into three groups: (i) sober—that is, unaffected by alcohol (36 per cent.); (ii) slightly affected (45 per cent.); and (iii) definitely intoxicated (hochgradig Alkoholbeeinflussung) (18 per cent.). Results of blood tests can be divided into three groups of comparable sizes: (i) less than 1 mg. alcohol per c.cm. blood (34 per cent.); (ii) 1 to 2 mg. per c.cm. (56 per cent.); and (iii) more than 2 mg. per c.cm. (10 per cent.). It is usually stated that a concentration of alcohol in the blood of 1 mg. per c.cm. produces symptoms of intoxication in about half the population. This concentration is equivalent to a total body content of alcohol of about 50 grammes in a person weighing 70 kilogrammes, and this amount of alcohol is contained in about three "large whiskies" or 3 to 4 pints of beer. The figures under discussion show that half the persons with a blood alcohol content of 0.6 to 0.8 mg. per c.cm. were slightly under the influence of alcohol, while half those with a blood alcohol content of 2.2 mg. per c.cm. were definitely intoxicated. These results suggest that the class "slightly under the influence of alcohol" must include a wide range of conditions. The clinical and chemical tests are in fair agreement. For example, out of 750 persons with less than 1 mg. of alcohol per c.cm. of blood only ten were found to be definitely intoxicated, whereas out of 250 persons with more than 2 mg. per c.cm. 130 were classed as definitely intoxicated and only nineteen as sober. Individuals, however, showed striking variations—for example, three persons with less than 0.4 mg. alcohol per c.cm. blood were found to be definitely intoxicated, while five individuals with more than 2.4 mg. per c.cm. showed no signs of alcoholism. Individual variation as regards susceptibility to alcohol is notorious, and the blood analyses confirm this familiar fact, since they indicate that some individuals are more affected by an amount of alcohol corresponding to one "large whisky" than others are by six times this quantity. In the past it has been suggested that tolerance to alcohol is due chiefly to delayed absorption, but these results imply a definite tolerance of the brain to alcohol in the blood. The results therefore show that the alcohol content of the blood does not with any certainty indicate the degree of intoxication. On the other hand, it does provide a fairly accurate estimate of the amount of alcohol that the subject has drunk recently. The medical profession is only too well aware of the unsatisfactory results of the estimation of alcoholism by clinical examination. The contradictory medical evidence so often given in law courts proves this. The estimations of blood alcohol at least provide objective data which indicate strong probabilities. If a man has a blood alcohol content lower than 1 mg. per c.cm. he is very unlikely to be intoxicated, and if he has more than 2 mg. per c.cm. it is very unlikely that he is in a fit state to drive a car. The compulsory taking of blood samples is apparently contrary to English common law, but it would be a considerable advance if blood samples given voluntarily could be tested officially. The amount of blood needed for the test is only a few drops, and since the rate of metabolism of alcohol in the body is fairly constant, the alcohol concentration in the blood at the time of an accident can be estimated with fair accuracy from a sample taken some hours later. Objective evidence of this type would certainly assist in those difficult and unfortunate cases where Dr. A. states that the accused was intoxicated and Dr. B., who examined the accused an hour later than Dr. A., states that he was perfectly sober.

[6] *New Engl. J. Med.*, 1937, **216**, 727.

[1] *Alkoholnachweis bei Verkehrsunfällen*. Dr. Kurt Hoffmann. Berlin: Urban and Schwarzenberg. 1937.

PNEUMONIA TO-DAY

Dr. Campbell Howard is justified in devoting a monograph to the diagnosis and treatment of pneumonia,[1] not only because, as Osler said, it has replaced consumption as the "Captain of the Men of Death," but because its study involves the principles of all medical diagnosis and treatment. In this respect it has replaced typhoid fever, now a comparatively rare disease, in lectures on systematic medicine. The modern history of pneumonia dates from the discovery of the pneumococcus in 1884, which was followed by the theory of a primary septicaemia, and then by the recognition of types in 1910. It is perhaps unfortunate that the number of types has now reached twenty-nine, according to some observers, for this to a large extent deprives typing of the clinical value it possessed so long as the classification into four main types held the field. As to the primary septicaemic nature of pneumonia, Dr. Howard appears to be doubtful regarding the demonstrable presence of the cocci in the blood stream as an indication of the severity of the disease (which it undoubtedly is) and as a secondary event (which is more

[1] *The Diagnosis and Treatment of Pneumonia*. Reprinted from Oxford Monographs on Diagnosis and Treatment. By Campbell P. Howard, M.D., C.M., F.R.C.P. & S.Can. H. Milford, Oxford University Press. 31s. 6d.

controversial). He quotes the evidence of bronchoscopy, which in fifteen cases revealed the presence of an atelectasis, apparently secondary to a bronchitis, and of *x* rays, which may show a displacement of the mediastinum and diaphragm towards the affected side in the early stages of the disease. This view would seem to upset the classical distinction between lobar-pneumonia and bronchopneumonia, which the German school was once so unwilling to accept. That atelectasis occurs in the early stages of influenzal pneumonia of the epidemic type is undoubtedly true—but this is generally regarded as a confluent bronchopneumonia. Dr. Christian, in his introduction to the monograph, attributes the therapeutic nihilism of the recent past to the predominating influence of morbid anatomy, the post-mortem examination revealing a condition apparently impossible to treat successfully. That was the consequence of studying end-results, but even to-day there is too much loose and contemptuous talk about "the bottle of medicine," which ignores the fact that as the body is continuously regulating itself by chemical means there is nothing intrinsically absurd in an attempt to modify its reactions by drugs. Dr. Howard therefore does not disdain to devote a section to special methods in the treatment of pneumonia. Among the non-specific methods he speaks cautiously concerning optochin, but does not mention transpulmin, another quinine derivative which seems specially useful in old or debilitated subjects. There is a full review of specific measures, which comes to a rather more optimistic conclusion as to the benefits of Felton's serum than is generally held in this country. The author is very doubtful as to any therapeutic value of vaccines in pneumonia, apart possibly for prophylaxis.

THE LEAGUE OF NATIONS AND NARCOTIC DRUGS

The serious situation in the Far East by reason of the increasing production of, and illicit traffic in, narcotic drugs has recently been reviewed by the Opium Advisory Committee of the League of Nations. China claims to be pursuing a six-years' plan for restriction of poppy cultivation, which was launched in 1934, and in two provinces, eight districts, and three municipalities the use and sale of opium are absolutely prohibited. There are, however, still 3,700,000 registered smokers in China and 300,000 addicts were under treatment in 1935. In the provinces now subject to Japanese influence the systematic increase of poppy cultivation and of the sale of opium is stated for the past year to have "attained alarming proportions." Illicit traffic in opium, morphine, and heroin is rapidly increasing in Manchuria and Jehol and is encouraged as a fruitful source of revenue. It was estimated that 500 kilograms of heroin were exported each week from Tientsin and that 90 per cent. thereof went to the United States. Canada also is suffering from this flow of narcotics from the Far East to the Pacific coast, and there has been no improvement during the last twelve months. The Advisory Committee recorded its alarm at the situation in the Chinese provinces under Japanese jurisdiction as constituting a real danger to the whole world. As regards the legitimate manufacture of morphine, heroin, and cocaine it would appear, from the statistical returns made by the Governments parties to the conventions of 1925 and 1931, that the annual production of these alkaloids now approximates closely to the level of legitimate world requirements as accepted by the League. It is somewhat disquieting to learn that poppy straw from the dried plant is being increasingly utilized as raw material for the manufacture of morphine. The Advisory Committee has been moved by a resolution of the International Labour Conference to tighten up the control of opium used for smoking in territories where the sale of "prepared" opium is still authorized, with a view to suppress smoking of opium among workers. There appears to be indisposition to proceed with the convening of an international conference on limitation of production of raw opium, as contemplated by the Council and the Assembly of the League of Nations. While the Governments concerned have stated that they are "prepared to agree to far-reaching measures for the final suppression of opium-smoking" the Advisory Committee is anxious for further consideration and revision of the information already at its disposal before embarking on a conference "whose reference should be sufficiently wide to include any problem relating to the production and use of opium."

MAGNESIUM SULPHATE TREATMENT OF ECLAMPSIA

The administration of magnesium sulphate by subcutaneous injection has of recent years been fairly widely used to control the fits in eclampsia. Professor W. Stroganoff and Dr. O. Davidovitch[1] have collected from the American and European literature reports on 449 cases so treated with a mortality of 9.1 per cent. Recent Russian medical literature mentions 245 such cases in which there was a mortality of 3.3 per cent. These results produced a favourable impression on Stroganoff, who now reports 200 cases treated on the lines which he has previously described—using morphine and chloroform, with venesection and artificial rupture of the membranes—with the substitution of magnesium sulphate for chloral hydrate. The magnesium sulphate was injected subcutaneously thirty minutes after the first injection of morphine. The average dose was 6 grammes, preferably in the form of 40 grammes of a 15 per cent. solution, followed by a further similar injection in five hours if there had been another fit. The dosage was diminished or the injections discontinued if the fits ceased. If the fits went on, the patient received further doses, the maximum advisable being a total of 24 grammes in twenty-four hours. It was found that smaller doses often failed to control the convulsions. One patient who died following rupture of the lower segment of the uterus, after having had sixteen fits, had been given only 2.6 grammes. In the 200 cases which Stroganoff records there were six deaths, a mortality of 3 per cent. The average duration of stay in hospital was 13.7 days. Sixty-nine of these patients had normal deliveries, artificial rupture of the membranes was necessary in seventy-three cases, forceps delivery in fifty-four

[1] *J. Obstet. Gynaec. Brit. Emp.*, 1937, **44**, 289.

cases, and there were fifty-six venesections. Stroganoff finds magnesium sulphate a powerful means of combating eclampsia and hopes that he will succeed eventually in reducing the mortality from eclampsia to below 0.5 per cent. for early cases in which severe complications are absent, and to a figure between 2.5 and 4 per cent. for all cases. He does not commit himself as to whether magnesium sulphate or chloral hydrate is the more efficient in treating eclampsia. He does state, however, that the former has the more certain effect in stopping fits, although he admits that while the magnesium sulphate was given thirty minutes after the first injection of morphine, chloral hydrate was not administered until an hour after the morphine. In certain rare cases the injection of magnesium sulphate was found to cause alarming symptoms, such as acute cyanosis, dyspnoea, and a feeble pulse. Should this happen it is advised that 10 grammes of a 5 per cent. solution of calcium chloride be given intravenously. Other complications included the formation of abscesses at the site of injection; for this reason the injections were subcutaneous rather than intramuscular. One further striking finding was that whereas the total mortality among the 200 cases was only 3 per cent., in the ten cases of multiple pregnancy the mortality was 40 per cent. Stroganoff appeals for further investigations into the treatment of eclampsia by magnesium sulphate, both with chloroform and morphine, and with ether but no morphine.

GIGANTISM

Gigantism is a rare condition of interest not only to the visitor to circuses but also to the medical man. A recent addition to the literature on this subject is supplied by Dr. H. Gray,[1] who has reported a case under the title of "The Minneapolis Giant." The patient's paternal grandfather, the Norwegian giant, was reputed to be 8 ft. 4 in. in height, while his father's height was variously stated by the patient to be 7 ft. 6 in. and 6 ft. 4 in. and his mother's 6 ft. 2 in. The patient himself was aged 46, was obviously acromegalic, measured 7 ft. in height, and weighed 19 stone; at the age of eight he was 6 ft. in height. A year later he started travelling in shows all over the world, and appeared in carnivals, circuses, and "so many movies that he cannot remember the names of any, except Harold Lloyd's *Why Worry?* in 1923, when he was advertised as being the second tallest man in the world," a claim which the author points out would seem to indicate insufficient information about other living giants. His habits were irregular, and although he seldom drank alcohol, on one occasion he was arrested by eight policemen because he acted a little peculiarly, having consumed by his account "maybe five or six cases of whisky." In jail his breakfast consisted of two gallons of coffee, of which beverage he was inordinately fond. His muscular strength was never remarkable, his memory was poor, he had had bitemporal hemianopia for the last fifteen years, and for five years epileptic convulsions and uncinate fits. He only noticed the enlargement of his hands and feet at the age of 31, five years after his acromegaly was recognized at the Mayo Clinic—this extraordinary delay in a patient's appreciation of the enlargement of his extremities was also observed by Dr. Leonard Mark in his book on his own case. The hair of the Minneapolis giant was of feminine distribution, and he seldom needed to shave; his penis was infantile, and his testes small and soft. The pituitary fossa was large, but there was no evidence of erosion of the bone. The basal metabolic rate was minus 17 per cent. His condition was considered to be due to a tumour of the eosinophil cells of the anterior lobe of the pituitary. Early in life this had been manifested by simple gigantism with destruction or inhibition of the gonad-stimulating cells and consequent failure of sexual development and lack of hair. After a period of more or less arrest the tumour evidently began to grow again, causing acromegaly and pressure on the chiasma with optic atrophy and bitemporal hemianopia. Among taller giants than the one referred to here may be mentioned the Gallatin giant (8 ft. 6 in.) reported by Lackey in 1899, the Irish giant (8 ft. 6 in.) reported by Cunningham in 1891, the Alton giant Wadlow (8 ft. 5 in.) reported by Barr in 1936, Ranke's giantess Wehde (8 ft. 4½ in.) and the Austrian giant (8 ft. 4½ in.) reported by Topinard in 1885. Gigantism has been described as acromegaly during the period of growth, and can only occur before the epiphyses have united. Because of the presence of a large and extremely vascular thymus in cases of acromegaly, some of the earlier observers regarded this condition as primarily due to excessive activity of the thymus, the enlargement of the pituitary being considered a secondary change. It is generally accepted now, however, that the anterior lobe of the pituitary is the growth regulator of the whole body, and that both gigantism and acromegaly are due to hypersecretion of the eosinophil cells of the anterior lobe, which may either contain an eosinophil adenoma or show hyperplasia of the eosinophil cells without any pituitary enlargement. Experimental evidence of the growth-promoting power of the anterior pituitary was obtained by Evans and Long, who first prepared extracts of the gland capable of producing gigantism in young rats.

[1] *Ann. intern. Med.*, 1937, 10, 1669.

Major-General William P. MacArthur will succeed Lieut.-General Sir James Hartigan as Director-General of Army Medical Services when the latter completes his tenure of office on March 1, 1938.

The Prime Minister will inaugurate the national campaign to encourage the wider use of the health services at a reception given by the London School of Hygiene and Tropical Medicine on the evening of Thursday, September 30. His address will be broadcast on the National wave-length at 9.30.

We have to announce with great regret the death in Chicago on September 2 of Dr. George H. Simmons, Editor Emeritus of the *Journal of the American Medical Association*. An obituary notice, with portrait, will appear in our next issue.

ANAESTHESIA IN GENERAL PRACTICE

This is one of a series of articles, contributed by invitation

ANALGESIA IN MIDWIFERY

BY

R. J. MINNITT, M.D., D.A.

The time has passed when the obstetric practitioner can satisfy the requirements of women in labour simply by committing their mental and physical sufferings to the care and moral support of a good nurse. The public is becoming increasingly aware that much can be done for the relief of pain, and an article on recent methods employed for the purpose is therefore justified. Two main types of administration are available: (1) drugs given by the oral route or hypodermically, and (2) inhalational analgesia.

Drugs

"Twilight sleep" is the term applied to a morphine-scopolamine narcosis in which an amnesic state is produced. It must be clearly understood that the labour is not painless, but when the narcosis is successful the patient should have no recollection of labour. The objection to its use in general practice is that constant supervision is necessary. There may be increased danger to mother and child unless the dosage has been very carefully gauged. This is controlled by strict observation of the patient, the technique being as follows.

When the pains are recurring at regular intervals the initial dose of morphine and hyoscine is administered by hypodermic injection, an average being morphine 1/4 grain and hyoscine 1/150 grain. The indication for the amount of morphine required below this is estimated at about 1/30 grain per stone of body weight. No more morphine is given, but at definite intervals the patient is roused and shown some common object—for example, a cup and saucer—and it is then noted what her response is when asked what she has seen. This is called the memory test. No further injection of scopolamine is administered during amnesia, but when this passes off 1/450 grain is given. The full effect of the drug is obtained when there is complete loss of memory. The patient is then usually flushed and the pupils dilated. Sleep occurs between the pains, but there is restlessness and groaning while they are present. After three injections of hyoscine, which are generally at hourly intervals, a longer period should elapse before another is necessary. Fluids will be frequently taken, as the drug causes extreme thirst, and attention must be paid to the bladder.

Nembutal (capsules 1½ grains each). This is administered orally, the technique being similar to that employed in twilight sleep. The initial dose in the average case is two capsules, with subsequently one capsule at three-hourly intervals, as required.

Sodium amytal (capsules 3 grains each). This drug is not as readily excreted as nembutal, and therefore gives a longer hypnosis. The initial dose ranges from three to six grains, and is repeated as indicated.

Sodium evipan (ampoules 1 gramme to be dissolved in 10 c.cm. of distilled water). Intravenous injection is the method employed, great care being exercised in administration to ensure an efficient airway. Small doses of 2 c.cm. produce a condition of twilight sleep, and with larger doses there is complete anaesthesia for delivery.

With all these drugs there is risk of respiratory depression, and therefore respiratory stimulants, such as carbon dioxide and coramine, should be at hand. It should be more generally recognized that the only drug we have that is truly analgesic is opium. Scopolamine and the barbiturates are merely amnesic in their action. Consequently, although relief is obtained from the pains of labour, it is in proportion to the loss of memory and the degree of hypnosis that these drugs are found successful. They should never be prescribed where liver or kidney damage is suspected.

Inhalational Analgesia

Chloroform capsules (or brisettes, 20 minims of chloroform in each). One of these is crushed and inhaled by the patient at the onset of a pain. Some experience is necessary in timing the administration to obtain good results, and it is a convenient way of controlling a single dose of chloroform after the fashion of the time-honoured method of dropping the anaesthetic on the mask. As chloroform has a toxic action on the liver and heart muscle it is not recommended that it should be continued for any lengthy period.

Gas and Air Analgesia

Nitrous oxide gas is both analgesic and amnesic at the same time, and does not have any toxic effect on the patient. In my opinion the best method of giving relief is by the administration of gas and air in the right proportions. It is essential to have a reliable apparatus, which is described below.

Nitrous oxide is supplied in steel cylinders of different capacities: 50 and 100 gallon sizes are the most suitable. They are of two types: (*a*) straight valve, where the key for turning on the gas fits on the spindle at the top of the cylinder, the outlet being at the side, and (*b*) angle valve, where the spindle is at the side and the gas flows from the top. As nitrous oxide in the cylinder is a liquid under pressure of between 700 and 800 lb. per square inch, an efficient reducing valve is essential to make the gas available.

APPARATUS

This consists of the reducing valve, which allows gas to be delivered to a small rubber bag enclosed in either a metal drum or wooden box. An automatic valve causes the flow to cease when the bag is full. As soon as the bag deflates through inhalation more gas is allowed to enter. The outlet of the machine is divided into two channels—one for the passage of gas and the other for the admission of air through small holes. A check valve intermits the flow, and is only lifted when a fresh supply of gas and air is inhaled, thereby preventing an escape while the patient exhales. The whole action is controlled by inspiration. The holder fitted to the face mask has in it a finger hole, which is occluded by the patient herself, but when the finger is raised air only is inhaled. This is connected to the machine by concertina tubing. The amount of gas intermittently consumed is on the average 35 gallons per hour. In a series of private

practice cases the cost of gas averaged about ten shillings for a period of five hours. The analysis of the mixture is approximately 45 per cent. nitrous oxide in air.

Two models are illustrated: Fig. 1, size 12 in. by 8 in. by 18 in., weight about 15 lb. without cylinders; Fig. 2, size 16½ in. by 7¼ in. by 4¾ in., weight without cylinder

FIG. 1.

9¼ lb. In Fig. 1 two straight valve cylinders are securely attached by tightly screwing up the nuts and using efficient washers, as it is essential that there should be no leaks. Only one cylinder must be turned on at a

FIG 2.

time, the gauge showing when it is empty. The valve of the one must be closed before the other is opened.

In Fig. 2 one cylinder (100 gallons) stands upright in a leather pocket made for the purpose, and a reducing valve is connected to it in a similar way, a small rubber pilot bag acting in lieu of the gauge.

TECHNIQUE OF ADMINISTRATION

The patient should be thoroughly conversant with the use of the mask before labour begins, so that when the time arrives for using it she is both confident in and familiar with what she has to do. If she is at all nervous she should be reassured; and she should fully realize that the analgesia is self-administered, that she does not lose consciousness, and that it gives definite relief from pain. The mask must be applied in perfect apposition to the face to prevent air-leaks, and the finger comfortably placed over the air-hole in the correct position. Unless care is taken with these details relief will not be obtained. The question is often asked as to when the analgesia should be started. The answer is, as soon as the pains of labour cause discomfort to the patient, at which time premedication with morphine 1/6 grain is of value, if desired.

In order that the full effect be appreciated it is important that the mask be applied to the face on the slightest indication of a pain—that is, before it has become established. The patient should be instructed to inhale and exhale normally, and to increase the depth and frequency of the breathing in proportion to what she can feel. When the pain is over the face-piece should be removed. This procedure can go on with each pain for hours and until the second stage of labour. The patient can drink freely of liquids when desired, as vomiting seldom occurs.

During the second stage of labour, when the expulsive voluntary muscles are brought into play, six to eight breaths should be taken in quick succession, the patient being told to hold her breath and force down as directed. At the time of delivery, unless full anaesthesia is indicated, the patient should be continuously inhaling from the face-mask as rapidly as possible, and must be instructed not to bear down. When it is considered that gas and air is not sufficient for the delivery of the child there is no objection to following it up with any anaesthetic, such as chloroform, ether, or gas and oxygen.

POINTS TO OBSERVE

1. The mother's pulse and the foetal heart rate should be estimated hourly.

2. Normal labour is accelerated by the use of gas and air. In those cases in which advance, however slow, does not take place, and relief is not obtained, these signs should be looked upon as diagnostic and a cause sought.

The following case is an illustration.

Gas and air analgesia was administered to a patient when the second-stage labour pains had become established. For the first two hours analgesia was satisfactory, but gradually became ineffective and the pains severe. No advance was taking place in the presenting part, although full dilatation was present. Both the mother's pulse and the foetal heart rate were rising. Diagnosis: a case of obstructed labour. Treatment: under a general anaesthetic a living child was delivered by podalic version.

3. It is important to remember that cyanosis (other than that caused by holding the breath) does not occur. If any is noticed steps must be taken to find out the reason.

The following case is instructive:

A woman started the administration of gas and air analgesia towards the end of the first stage of labour. After continuing this intermittently for a few hours it was found that cyanosis was produced, and the blueness did not completely disappear between the pains. Diagnosis: an examination of the chest revealed rales and rhonchi over both lungs and oedema was suspected. This was due to a previous influenzal cold, which had settled on the chest. Gas and air was discontinued as being an unsuitable analgesic.

There are, therefore, contraindications to the use of gas and air analgesia in labour, but only in the abnormal cases. These are: (1) Patients having any heart lesion in which compensation is incomplete. Apart from the physical signs this would be shown by rapid pulse and varying degrees of cyanosis. (2) Patients with pulmonary conditions—that is, phthisis, bronchitis, and other congestive conditions of the lungs. (3) Patients with albuminuria and high blood pressure, who might possibly develop an eclamptic fit.

The apparatus was never intended for the purpose of anaesthesia, so that it is precluded in the ordinary way for any obstetric operation, such as version, the application of forceps, or extensive repair of the perineum.

TRAINING OF MATERNITY NURSES

A course of instruction in the administration of nitrous oxide and air by midwives has been inaugurated in many teaching hospitals, and when a sufficiently high standard of efficiency has been attained a certificate is issued. Consequently, maternity nurses who have obtained this certificate will be qualified to undertake the supervision of the administration of gas and air both in domiciliary practice and in nursing homes. This will enable the practitioner confidently to receive great assistance from the nurse during the earlier stages of the labour.

DETAILS OF RESEARCH

It may be of interest to record the scientific work that was carried out with the assistance of Dr. Hilda Garry in the Liverpool Maternity Hospital in March, 1934, to show that there was no danger to mother or child by the use of gas and air analgesia. Electrocardiograms were taken of a series of patients immediately before and at the end of the administration, and again a day or two later. Dr. Leslie Cunningham, medical officer in charge of the electrocardiograph department of the David Lewis Northern Hospital, Liverpool, kindly reported on these, and stated that they did not appear to be influenced to any extent as the result of the patients' experience.

The alteration in the mother's pulse and in the foetal heart rates, estimated at approximately equal intervals during analgesia, was within normal limits.

A biochemical study was made of blood obtained from a maternal vein and the umbilical cord in a number of patients immediately after delivery, with and without analgesia. The conclusions were that, although the administration of gas and air reduced the oxygen content of the mother's blood, the blood of the umbilical cord did not show any marked alteration.

In January, 1936, the British College of Obstetricians and Gynaecologists published a report on the investigation into the use of analgesics suitable for administration by midwives, in which it was stated that gas and air administered by a similar apparatus to that described was a safe and satisfactory method of producing analgesia. There were certain criticisms concerning weight and bulk, and it is highly gratifying to note that these difficulties have now been removed.

During the last three years the just demands of parturient women for the provision of the best relief available have received greater recognition. As the public grows more "gas-minded" drugs will give way to inhalational analgesia. With the further increase of interest, acquirement of knowledge, and improved organization, the means for obtaining this relief will become still more simple and expedient.

A NEW RADIOLOGY DEPARTMENT IN EGYPT

BY

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The Pyramids at Cairo are known throughout the world and to many they symbolize Egypt. Not so well known is the progress made in many modern spheres under the dynasty of Mohamed Aly the Great. The Ministry of Education, which recently celebrated its centenary, provides a striking example of the advance made with the help of extensive European guidance, and the development of the Egyptian University over the last twelve years has been extremely rapid. The Faculty of Medicine, which includes the old Kasr-el-Ainy school and hospital, is building on an island in the Nile what probably will be when completed the largest teaching hospital in the world. In 1922 an international competition resulted in Messrs. Nicolas and Dixon Spain of London being chosen as architects.

The foundations of the whole hospital were completed in 1930, and about 400 beds are now in use. The radiology department as planned in 1922 was found to be smaller than was required by the increase in the work. At my suggestion it was replanned in 1930, the electrotherapy accommodation removed elsewhere, and a new story added to the building. In 1932 the plan was further modified to include two wards pending the completion of the whole hospital. In 1936 a start was made by the reception of patients. In this hospital, as in Sweden, radiologists have clinical charge of beds, and forty-three beds are now (May, 1937) occupied by patients receiving treatment by radium or *x* rays, or both these agents. There are five radiologists on the staff of the department, three of whom hold the Cambridge diploma, while an assistant surgeon is delegated from the department of surgery to act as surgical specialist. In addition, radium is available to such of the surgical or gynaecologist staff as wish to employ it, but its use in this way has been mainly by the ear, nose, and throat staff.

Lay-out and Equipment

The department occupies part of the first and the whole of the second floor above the out-patient accommodation. On the first floor are situated lecture theatre, museum, photographic dark room, film stores, patients' waiting rooms, workshop, and typist and filing clerk and technicians' rooms. The second floor has the shape of a capital T, the top of which is principally for diagnostic radiology. The stem of the T is for therapeutic radiology. The diagnostic section has barium insulation and rubber flooring, and includes an electrically refrigerated dark room. All rooms used for patients (except the wards) have electric heating. There are screening rooms and two radiographic rooms. Of the four rooms three are equipped with two tables, making seven tubes in all. One of these is of rotating anode type. By means of electrically interlocked and operated switchgear, designed by me and made in Cairo by kind permission of the Director-General of the Physical Department, each of the four control tables in the four *x*-ray rooms on the low-tension side and the corresponding *x*-ray tube on the high-tension side can be connected to either a six-valve or a four-valve generator. Both generators can be employed simultaneously. This system, which is believed to be original and which saves almost the whole cost of two generators, facilitates the repair of faults, as each generator acts as a stand-by for the other. All the apparatus is shock-proof, the generators being situated in a machine room upstairs, and cables are led through the ceilings to the *x*-ray tubes. A dental apparatus of the new self-contained type is also in use for the work of the dental school.

Treatment by Radiation

For therapy a superficial treatment apparatus working at 80 kV and a short distance (Chaoul) apparatus have been in use over the past year. The latter in my opinion seems likely to displace radium for superficially situated easily accessible small growths by reason of its advantage in cost and convenience to the patient. For deep therapy at 200 constant kV there are two tubes operated from a modernized Weifa apparatus, placed in a machine room above, and a constantly evacuated tube (Metropolitan-Vickers) working at 250 constant kV. A further room awaits equipment, the 1930 plan mentioned above providing for six deep-therapy rooms. These rooms are lined with lead tiles, cast locally, and interlocked with each other. All this apparatus is shock-proof. There are also rooms for the staff and for physical and measuring and biophysical laboratories, but these latter are not yet equipped or staffed.

The two wards, male and female, of twenty-eight and fifteen beds respectively, are named in honour of Roentgen and the Curies. There is a theatre for implantation and the minor operative work associated with radiation treatment, a clinical laboratory, a radium applicator preparation room, and a radium-beam apparatus in a room adjacent to the radium safe.

The light-weight radium-beam apparatus was designed by me and made by the Solus Electrical Company, London, in 1935. Of experimental type, it will be described in detail elsewhere, but, in short, it permits the automatic electric conveyance of the radium from the inside of the safe to the patient with the operator at twenty feet distance. Here the radiation is within the assumed tolerance. The weight on the patient is only a few ounces, and movement on his part over a few inches does not alter his position with regard to the radium. Gold is used to reduce the amount of lead protection employed. The unit at present is 2½ grammes, but the apparatus has been designed so as to make later a 5-gramme unit.

Recently the number of patients treated has been at the rate of 800 per year. Most are cases of malignancy, and of these the great majority were suitable for treatment only by *x* rays. The numbers treated are increasing, and use of the "shift" system, as in many places abroad, should result in more economical use of the plants.

Progress since 1923

When I came to Egypt in 1923 Kasr-el-Ainy Hospital possessed one *x*-ray room; very little treatment was possible, and the diagnostic examinations numbered 1,600 a year only. In 1936 about 43,000 were made, principally in the old hospital. The development that has occurred has been considerable, but much remains to be done. Under the Anglo-Egyptian Treaty, so advantageous in many respects, heavy defence expenditure will be incurred and progress may be slower towards solving the problem of training the radiologists required for a population of fifteen millions and who at present number less than one per million. It will probably be many years before the chair in medical radiology approved by the Ministry of Education in December last is created in the university.

We are informed that a law to be enforced immediately in Buenos Aires will necessitate the production by the bridegroom, before marriage, of a certificate stating that he is free from any venereal disease which might be transmitted to his wife. The certificate, for which there is no charge, is to be presented to the civil authorities. The law does not apply to women, and includes clauses providing for the closing of houses of ill fame and for the "compulsory hospitalization of refractory cases of contagious infection."

OUTBREAK OF FOOD POISONING IN LONDON

GAERTNER BACILLUS ISOLATED

On August 25 it was announced in the Press that there was an epidemic of food poisoning in St. Pancras and Finsbury, about forty cases having been traced, with one fatality. It was announced later that the source of the poisoning had been traced to a shop in Finsbury and that gammon was the offending foodstuff. An inquest was held on August 27 into the deaths of two patients thought to be due to food poisoning. The inquest was adjourned until September 2, when it was stated that H. Horsman, aged 73, and Mrs. Billingham, aged 54, had died from acute enteritis due to bacterial food poisoning, and that W. Tonbridge, aged 43, had died of acute bronchopneumonia as a result of a Gaertner infection. Dr. Albion, a medical officer of the Ministry of Health, stated that he had examined samples of cooked and uncooked gammon and other food from the shop in Finsbury and had found the Gaertner bacillus in some of the food: in a cut from the centre of the uncooked gammon there was no sign of it. For the following account we are indebted to Dr. Percival V. Pritchard, deputy medical officer of health for St. Pancras.

The Beginning of the Outbreak

A full account of the outbreak of food poisoning in St. Pancras and Finsbury cannot be recorded at this stage. Cases are still coming to notice and the investigations which must of necessity be made are still incomplete in many respects. Meanwhile a brief account can be given of what has happened in St. Pancras.

On Monday, August 23, three cases of food poisoning were notified. This is a notifiable disease in London. My inspector found a fourth case during his investigations. All four had partaken of cooked food bought on Saturday, August 21, from the same shop in Finsbury. This information was given to the medical officer of health for Finsbury so that he could deal with the shop which seemed to be the source of infection.

Three of these patients were ill within nine hours and the fourth within thirty hours of eating ham or corned beef, or breakfast sausage. The symptoms were very severe abdominal pain and diarrhoea with marked prostration; vomiting was delayed for several hours and was not severe; there was a mild degree of fever.

Further Investigations

On August 24 Dr. N. D. Dunscombe, M.O.H. for Finsbury, told me about a case of the poisoning which had been brought to his notice in his investigation of the shop. This person, Mrs. S., worked in St. Pancras and lived in Islington. We found that she, her husband, and two daughters had all eaten ham bought from the shop under investigation and that with the exception of the husband they were all suffering from symptoms of food poisoning. The case was made difficult at first by the fact that the woman denied having eaten anything from the shop. This was seemingly done as an act of kindness to the shop. The truth, however, was eventually forthcoming. The daughters were at home ill and the M.O.H. for Islington was accordingly told of the circumstances. He visited and continued the survey. Mr. S. was not ill in any way, although he had had ham with his family. As a result of questioning Mrs. S. we found three more cases at her place of work in St. Pancras. These people had bought ham from the same shop on Monday evening and were ill within nine, twelve, and nineteen hours respectively after partaking of it. They showed the symptoms which have been common to most of the cases.

On Wednesday, August 25, Mr. Wilkie of the St. Pancras Hospital informed me of the death of a patient, Mr. Horsman, who had been admitted to the hospital on the previous Sunday

with severe enteritis. His examination of the stools had progressed as far as demonstrating the presence of a non-lactose fermenting organism. This pointed to the possibility of infection with *B. typhosus* or other organisms of the Salmonella group which could account for the enteritis. Mr. Wilkie had been given a history of eels in his patient's diet. I decided to investigate this.

The situation at that time was as follows: We had no evidence of any cases being connected with the shop beyond our original four notifications. There were three distinct investigations proceeding in connexion with enteric fever—missed, suspected, and actual—in the borough. There was a small, well-confined outbreak of ten cases of food poisoning in an institution.

On investigation at Mr. Horsman's lodgings it was found that he had eaten ham from the shop on August 20 or August 21. He lived alone in a furnished room. He was ill on August 22, and his doctor sent him into St. Pancras Hospital late that day. We obtained the ham which remained and had it examined bacteriologically at University College Hospital. The final report on that was: no typhoid, paratyphoid, or dysentery bacilli; no organisms of the food-poisoning group were isolated, such as *B. gaertner, B. aertrycke,* or *B. newport*; no other abnormal coliform organisms isolated. On culture there was a very marked growth of staphylococci, 10 per cent. of which were *S. aureus* and 90 per cent. *S. albus*. A growth of non-haemolytic *Streptococci mitis* was also obtained. At the same time as this investigation led us so directly to the suspected ham and suspected shop, Mrs. S. admitted the connexion there and the other cases were brought to light.

The fact that a food poisoning outbreak had actually started was now evident. Doctors working in the affected area were immediately informed of this. Some doctors had already met the epidemic and were able to make a diagnosis of cases which had puzzled them. We followed up these cases at once from lists supplied by the doctors, and were able in that way to trace the food eaten, in all except one case, to some connecting link with the Finsbury shop. It will be seen that cases came under notice in various ways: statutory notification, notice by patients' letters, and in the course of investigating other cases. The epidemic is not yet fully explained. There has been no time. These brief facts and questions may produce interest and may be answers to some of the problems which the outbreak has produced.

The Question of "Toxin"

Gaertner bacilli have been isolated in a number of the stools. One man was ill within five hours of eating the ham. Other patients were ill within eight and nine hours. Most of them took twelve hours and more. The question arises, Can a Gaertner infection be followed by enteritis in the short space of five hours? Was there a massive dose of preformed toxin in the meat? The following case is interesting. Mrs. C. bought some breakfast sausage from the shop and gave it to her two sons. She is quite certain she had none of the food herself from that place. The three were taken ill at the same time and she was removed to hospital. Her stools were very carefully examined, but no Gaertner organisms were found. Were these cases affected by toxin? If so, it must have been very potent to act in the way it did. In several cases where groups of people, say a family, were affected it has been interesting to relate the amount of the suspected food eaten with the severity of the illness. The rule seems to have been that the more eaten the greater the degree of attack. This was shown in two groups by the number of "poisoned" sandwiches eaten. These and the many other interesting points which have arisen in connexion with this epidemic will receive further consideration, and will no doubt form the subject of a complete report at a later date.

The Duke of Kent will open the new radiological department of the North Staffordshire Royal Infirmary, Stoke-on-Trent, on October 13. The department has cost £24,000, of which £11,000 was given by Mr. G. H. Downing, a former High Sheriff of Staffordshire.

POSTGRADUATE MEDICINE

THIRD INTERNATIONAL CONGRESS AT BERLIN

We are indebted for the following account to Colonel A. H. Proctor, D.S.O., M.D., Dean of the British Postgraduate Medical School, Hammersmith.

The Third International Congress on Postgraduate Medical Education began on August 21 in Berlin. There have been two previous congresses on postgraduate medical education, the first in 1909 in Budapest, and the second in London in 1913. Since the war no further congresses have been held. This year's congress was organized by Professor Adam, a member of the original committee, and Secretary General. The German Government gave generous help and assistance, and the meeting was presided over by Dr. Kurt Blome, the director of postgraduate medical study appointed by the Reich medical leader. The congress met in the large hall of the Langenbeck Virchow House, and the interest aroused is shown by the fact that although the hall will seat 700 people extra chairs had to be brought in. Forty countries were represented, France by no fewer than eleven delegates and Japan by nine.

Dr. PFUNDTNER, Secretary of State for the Interior, who formally opened the congress on behalf of the Reich Minister of the Interior, Dr. Frick, who was unable to be present, referred to the influence of such meetings in promoting international good will and friendship.

The Doctor in Modern Germany

The Reich medical leader, Dr. WAGNER, then read a paper on "The Position of the Doctor in the New Germany." He opened by stating that the doctor's chief duty was to combat those conditions "which history shows have caused nations to perish"—namely: (1) the decline of births; (2) the swamping of the best and most capable parts of a nation by those elements which had no right to existence; (3) the mingling with the blood of a different race. The chief task of the German doctor lay in promoting all measures which would strengthen the health and vigour of German individuals. He outlined the scheme by which a medical survey of the whole working population was to be carried out and early departures from normal health recognized and treated. In future each German was to get a medical certificate which would record all medical facts of importance from birth to death. (Free choice of doctor was insisted on.) The new "Reichsärzteordnung" of April 1, 1936, fixed the rights and duties of the German medical man. It was a legal duty for him to support the steps taken by the State and party in the sphere of population and health policy. The profession of a doctor was no longer a trade in Germany, but a public task settled by law. The "Chamber of Doctors" (Reichsärztekammer) controlled the medical profession. It could distribute doctors systematically over the country and prevent, if necessary, the setting up of practice in places whose requirements were already provided for. Postgraduate education was no longer left to his discretion. It was his duty, and only teachers were exempt from such courses. The Chamber also had full disciplinary powers. Permission to join the panel under the insurance scheme was given by committees consisting of doctors appointed by the K.V.D., a special corporation including all doctors on the panel. It was to this body the panel doctor was accountable for the fulfilment of his contract, and this corporate body was responsible to the insurance organization for the orderly and good medical treatment of the insured person.

Postgraduate Education in Germany

In a paper on research and postgraduate study Professor BORST of Munich put forward a strong plea for free and independent research—that is, research which had no particular aim other than to determine true relationships. Only in times of stress and in emergencies could the research worker be assigned special problems. He stressed the necessity of training the rising generation. Research, instruction, and medical postgraduate study were inseparably related. Postgraduate courses must include the progress made in the natural sciences and in biology. Research was essential for the good physician, and must find a place in all sound proposals for postgraduate education.

The organization of postgraduate study in Germany was described by Dr. BLOME. Intensive refresher courses for all doctors were now compulsory once in five years. In 1936 4,941 doctors attended such courses. The number of doctors attending each course was limited to twenty, and postgraduate centres had been established in sixty-eight centres. Country practitioners attended for three weeks, but medical men residing near centres could take evening courses over a longer period. These were not regarded as so satisfactory. At each centre a director had been appointed whose duty it was to organize courses in co-operation with the instructors and in accordance with the general principles laid down. Fees were charged for the courses and had to be paid by the doctors themselves; assistance was provided for those who needed it. Advanced study was basically international in character and was guided by the Academy for Medical Postgraduate Study. This was given in a university or an academy. For example, Munich academy was devoted more especially to the physiology of work, and in Dresden studies were conducted in nature courses, spa treatment, fasting, and other forms of treatment which had been largely in the hands of non-medical healers. These courses were now sponsored by the medical profession and not, as formerly, by the administrative authorities of bathing resorts and spas. Special courses were held at Alt-Rehse, where there was a school for leaders of the medical profession. (By "leaders" are meant leaders for the organization of health policy in accordance with present political ideals in Germany.)

Dr. Blome was followed by Professor OBERLING of the Medical Faculty, Paris, who gave a survey of medical postgraduate study in France, and a further paper on the importance of pathological anatomy for postgraduate instruction. Speakers from Austria, Japan, Italy, Switzerland, Greece, and Poland each in turn described postgraduate facilities available in their respective countries.

The "New" German Medicine

On Monday, August 23, the congress opened with a paper by Professor GROTE, Superintending Physician of the Medical Clinic of the Rudolf Hess Hospital at Dresden, on the "New German Medicine in Postgraduate Study." Professor Grote's paper was a little difficult to follow. It indicated that the new German medicine had acquired a new outlook in two directions. First, it was concerned with the diseased conditions in racial and national life, and therefore devoted its attention to problems of heredity and the conclusions to be drawn from them. From this had arisen the new marriage laws and prevention of hereditary disease. Secondly, in the past German medicine had been mainly concerned with the cause and mode of origin of symptoms in an attempt to attain ideal therapy by treating the cause. German medicine to-day was engaged in the interpretative analysis of symptoms and their significance, and in the region of therapy was investigating dietetic and physical procedures which had met with success in the treatment of disease.

Colonel A. H. PROCTOR, Dean of the British Postgraduate Medical School, London, read a paper on the British Postgraduate Medical School and the necessity for separating postgraduate from undergraduate teaching. He referred to the part played in postgraduate education by hospitals devoted to special diseases.

Postgraduate Training in Obstetrics

Professor WAGNER of Berlin and Professor VAN ROOY of Amsterdam read short papers on the particular difficulties of postgraduate study in obstetrics. Each reviewed briefly the conditions for the training of students, and suggested that this should extend over several years. Postgraduate training in obstetrics was even more difficult as it had to be crowded into a short space of time. Professor Wagner considered the problem hard to solve in countries where delivery in the home with the aid of a midwife and eventually a general practitioner or a specialist was advocated. He recommended the utilization of large public lying-in hospitals which did not serve any other educational purpose. All physicians engaged in the practice of obstetrics should be compelled to attend postgraduate courses periodically.

Surgery, Tropical Medicine, Radiology

Professor SAUERBRUCH, Director of the University Surgical Clinic, Berlin, in a paper on postgraduate study in surgery, stressed the difficulty of training in operative surgery and the necessity of illustrating the principles of surgery in simple cases.

Professor MÜHLENS, Director of the Tropical Institute, Hamburg, said that the courses held there included a special nine weeks' course, at the end of which an examination was held and a diploma granted. Other courses provided were: one in Spanish, a special course for ship surgeons, courses for candidates for the degree of doctor of medicine, and for assistantships in various laboratories and in the tropical hospital. As many as 300 or more students attended during the year from all parts of the world.

Professor HOLTHUSEN of Hamburg, in a paper on diagnosis and therapy by radiation, drew attention to the fact that various specialists used *x* rays in their clinical work, and many general practitioners were also more or less active in this field. Efforts were now being made to induce more practitioners to take up radiology as a special subject. Measures for training the rising generation of doctors had not kept pace with requirements.

Postgraduate Study in Psychiatry

Professor KLAESI, Director of the University Psychiatric Clinic in Berne, in an interesting paper on postgraduate study in psychiatry, referred to the loss of the old family physician, who was helper and counsel not only in disease but also in the emotional and moral problems of his patients. One-sided thinking in the natural sciences had led to the functions of the old family physicians being taken over by "occupational" and "matrimonial" advisers, "psychotechnicians," and quacks. The student should be stimulated to take an interest in psychiatry and in the wider study of human conduct. He considered that facilities for postgraduate study in psychiatry could

be provided by properly edited periodicals, evening clinical demonstrations for general practitioners, and vacation courses.

Dr. ENGEL of Berlin, discussing the importance of postgraduate study for the State and those who administered insurance, pointed out that there were 20,000,000 insured persons in Germany, and their healthy working power was a most precious possession. The influence of medical progress affected not only the present but future generations. He stressed the great importance of postgraduate study in industrial organization in raising earning power, in providing occupational welfare work, and in the prevention of disease and the treatment of accidents.

The Cancer Campaign

The morning of Tuesday, August 24, was devoted to the campaign against cancer and its importance as a subject of international postgraduate study. The discussion was introduced by Dr. SCHRAENEN, Secretary of the Belgian Society for the Combating of Cancer, and by Professor AULER, Secretary General of the German Commission. Other papers were contributed by Professor FISCHER, Rostock; Professor KÖNIG, Wurzburg; Professor SCHRÖDER, Leipzig; Professor HAUBOLD, Berlin; and Professor REDING, Brussels.

Dr. Schraenen said that the object of the campaign against cancer was to give the best possible treatment to the greatest possible number of patients at the earliest possible stage of the disease. In order to achieve this ideal the following demands must be met. The public should have a basic knowledge of the nature of cancer, know what methods existed for fighting it, and above all must be persuaded of the importance of their own co-operation in this struggle. The diagnosis of cancer must be so organized that the disease might be definitely recognized as early as possible. Opportunities for suitable early treatment should be assured. For subsequent treatment there must be a service of supervision, and also a "social cancer welfare" organization devoting itself to the economic and psychological consequences of cancer for the patient and for his family. The measures required for this were the special scientific training of medical students in relation to cancer; a constant reawakening of the interest of practising physicians (for example, by making available to them treatises on the progress of cancer research, by courses, by postgraduate lectures); close co-operation of physicians in dealing with individual cases through the welfare service of the cancer league; co-operation between the medical profession and the anti-cancer centres (institutions which unite all the measures for dealing with cancer—diagnosis, therapy, research, and instruction). The practical side of the question, which had been recognized by all as being of the utmost urgency, had not been tackled.

Professor LAMBADARIDIS of Greece said that in Greece the mortality from cancer was probably higher than in any other civilized country. The total population was about 7,000,000. He estimated that about 350,000 were suffering from cancer. Statistics, however, were for various reasons lacking. This year an institute for cancer research had been established from public and private funds, but there was a serious lack of doctors with special training. Examination stations should be established which the entire population should be compelled by law to visit at regular intervals. The family doctor had an important part to play in the fight against cancer, especially in early diagnosis. Professor Lambadaridis's proposal that the family doctor should remove biopsy specimens for diagnosis, although it may not be approved in this country, may, with the conditions of practice in Greece, be necessary there. In Greece it may be impossible to obtain the opinion of an expert in these cases or to send them to a hospital until their diagnosis is confirmed.

Professor SCHRÖDER of Leipzig described the part the general practitioner could play in the campaign against uterine cancer. He advocated written and pictorial propaganda, exhibitions, and instruction by social workers, community nurses, and midwives.

Films in Education

On Tuesday Dr. KITTLER read a paper on the use of films in postgraduate study. Some excellent films illustrated the indications for the administration of insulin in diabetes. So far as major surgery was concerned, it was thought that films could only serve to broaden the therapeutic range of vision of the general practitioner; they were not of much use in teaching operative surgery. Interesting films of the mechanism of labour, made up in the same way as the well-known Walt Disney films, were also shown.

An International Academy for Postgraduate Work

On Tuesday afternoon a special meeting of the International Congress of Postgraduate Medical Education Committee was held, and a proposal was brought forward to establish an international academy of postgraduate work and research. The draft constitution and statutes were submitted and a prolonged discussion took place on the various proposals contained therein. The object of the academy is to foster medical postgraduate work and research on an international basis; to make accessible to all the other members of the academy the achievements of the various countries and their investigators, both in general medicine and in its special branches. Its duty would be to organize postgraduate courses, study-meetings, and congresses; control the exchange of teachers and students of every affiliated country; to offer opportunities for advanced and postgraduate study in each country; to arrange study-tours in foreign countries; to improve methods of teaching, especially with regard to the use of films; to translate and distribute publications of special importance from distant places; to help to finance important research; to impart information about the particular problems of various countries and their branches of research; to distribute and advise doctors of affiliated countries, groups, and special groups.

It is proposed that a permanent bureau should be set up in Berlin, and the general organization was outlined. The approval to establish such an academy was carried by a large majority and the draft constitution and statutes were referred to a smaller committee. Such an academy would serve a very useful object not only in promoting medical progress but in furthering international fellowship and friendship.

Facilities for the Foreign Doctor in Germany

Wednesday, the concluding day of the congress, was opened by a paper by Professor ADAM of Berlin, on the opportunities for advanced study for foreigners in Germany, such as: (1) posts as voluntary assistants in clinics and institutes, the smaller universities being best suited for this; (2) the international postgraduate courses in March and October for specialists in their given fields;

(3) courses in Spanish specially designed for Latin-American students. Professor Adam also described the various organizations which gave special aid to foreign physicians. These included: (*a*) the Information Office of the Kaiserin Friedrichhaus, Berlin; (*b*) the Foreign Section of the University of Berlin Staff Association; (*c*) the Institute for Foreigners in the University of Berlin, devoted chiefly to teaching the German language to foreigners; (*d*) the America Institute; (*e*) the Japan Institute; (*f*) the German Academic Exchange Service, an organization which arranges exchange positions for German and foreign physicians: with its Humboldt Foundation it is in a position to grant fellowships to foreign physicians during their stay in Germany.

Dr. KENNEDY of Cornell University, New York, then began a general discussion on the international exchange of instructors and students, in which a number of delegates took part.

Industrial Medicine

A discussion on instruction and postgraduate study in industrial medicine was introduced by Dr. BAADER, Director of the University Institute for Industrial Medicine. Stressing the necessity for special study in this particular branch of medicine, he pointed out that in Germany this was a post-war development and that rapid mechanization and technical processes had resulted in the manual labourer being worn out at the age of 45 to 50. In Berlin there was a university institute for occupational diseases. At Munich there was an institute for the physiology of work and a pathological institute for industrial and accident hygiene. In the Ruhr district several hospital departments were engaged in the study of pneumonoconiosis, etc. Besides these, special clinical departments in industrial hygiene are provided at the Reichsgesundheitsamt, the Workers' Protection Museum in Berlin, the Museum of the German Society of Workers' Protection in Frankfort-on-Maine, and the Bochum Museum of Mining.

Dr. E. L. MIDDLETON, one of the English delegates, described the education in industrial diseases that is provided in England, and a number of other physicians from Paris, Italy, Brussels, and Buenos Aires took part in the discussion.

W. Haupt (*Med. Klinik*, July 16, 1937, p. 957) cites comparative statistics of mortality from cancer in different countries. For each 10,000 inhabitants 13.4 died of cancer in Germany and 15.3 in England. The general mortality for each 10,000 inhabitants was 107.8 for Germany and 124 for England. However, there is no connexion between general mortality and mortality from cancer. In Chile, for example, the general mortality is 267, while the mortality from cancer is only 7.2. The mortality from cancer in Germany is higher for women than for men, the proportion being 121 to 100. The proportion is much higher in the United States—namely, 220 to 100. Cancer of the genital organs accounts for one-fifth to one-quarter of all cases of cancer in women, and 60 per cent. of all cases occur in women under the age of 50. Unfortunately a large proportion, varying from 42 to 82 per cent., neglect to seek medical advice until it is too late. The author recommends a number of measures for the campaign against genital cancer, the most important preventive measures being voluntary regular yearly examination of all women over 35 years of age and supervision of all cases already treated. Finally, he cites statistics relating to the results of treatment of carcinoma of the uterus in its different stages.

BRITISH ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

THE NOTTINGHAM MEETING

The British Association met at Nottingham this year from September 1 to 8, under the presidency of Sir EDWARD POULTON, F.R.S., and full accounts of its activities have appeared in the daily press. We give here a brief summary of one or two of the subjects discussed at the meeting.

The Presidential Address

The wide general interest in scientific progress to-day is in marked contrast to the antagonistic attitude displayed by other branches of learning as recently as a century ago. When, at the Oxford meeting of the British Association in 1832, honorary degrees were conferred on David Breuster, Robert Brown, John Dalton, and Michael Faraday, current opinion was reflected in a letter from John Keble to a friend: "The Oxford doctors have truckled sadly to the spirit of the times in receiving the hodge-podge of philosophers as they did." The doctrine of evolution probably stirred more widespread opposition than any other scientific advance. In surveying the history of evolutionary thought in the presidential address to the British Association at Nottingham, Sir EDWARD POULTON traced its progress as it may be followed in the series of meetings of the Association, dating as far back as 1881, with which he has himself been personally concerned.

At the Jubilee meeting of that year the outstanding event was Huxley's evening lecture on "The Rise and Progress of Palaeontology," the foundation upon which geographical, geological, and biological evolutionary history had been built. It was surprising to reflect that many of the older naturalists, even so late in the Victorian era, had found almost insuperable difficulty in believing that the land had been for the most part deposited under the sea, or in accounting for the presence of fossils, "formed stones" as they were called in those days. Huxley cited the work of Nicholas Steno of Florence, published in 1669, concerning certain fossils of the Tuscan rocks, known as glossopetrae, and commonly believed to be fossil fig leaves. By dissection of a shark's head Steno showed the complete correspondence between the "glossopetrae" and the shark's teeth—"that in fact they were shark's teeth." Surveying Steno's further studies of Tuscan fossils, proving their relationship to terrestrial, fresh water, and marine organisms, studies later extended over a wider area by Button, Huxley envisaged the framework of palaeontology as thereby completed save for one component. This was supplied towards the end of the eighteenth century by William Smith, who showed that rocks of the same age were identifiable in all parts of the world, while the biologist could follow the changes in living organisms, constituting a record of constant extinction and continual regeneration of new species.

Following the establishment of the conclusion that life has existed in this world over a vast period of millions of years, discussions regarding the actual age of the earth continued intermittently at British Association meetings from 1892 until 1921. It was a matter of difficulty to reconcile the conclusions reached by exponents of different sciences. Thus the physicist, Lord Kelvin, estimated a hundred million years as the period during which the earth had been sufficiently cool to support life, an estimate later reduced by Professor Tait to ten million. The geologists and biologists, however, maintained that an immensely longer period was required for the history of fossiliferous rocks and the evolution of animals and plants. In 1896 the

physicists were disagreeing among themselves, Helmholtz allowing the sun eighteen million years for giving out radiant heat at its present rate, while Kelvin allowed 500 million. Sir George Darwin, who concurred with Kelvin, nevertheless drew the reasonable conclusion that "the physical argument is not susceptible of a greater degree of certainty than that of the geologists, and the scale of geological time remains in great measure unknown." Again, in the words of Sir William Turner at the Bradford meeting in 1900, the birth of this world "must have been in the far-distant past, at a period so remote from the present that the mind fails to grasp the duration of the interval."

Discussing organic evolution, the President threw some light upon the reception of Darwin's *Origin of Species* by the laity, showing that the clergy especially were less antagonistic than was generally supposed. He was himself present at the Church Congress at Reading in 1883, and recalled the unanimous enthusiasm with which the audience received a paper by Aubrey Moore on "Recent Advances in Natural Science in their relation to the Christian Faith." Nevertheless, the new conceptions were not easily assimilated. Contemporary comment some twenty years earlier, in 1861, was illustrated by the verse:

> "A deer with a neck that was longer by half
> Than the rest of its family's (try not to laugh)
> By stretching and stretching became a Giraffe,
> Which nobody can deny."

With regard to acquired characters, maintained by Weismann to be incapable of hereditary transmission a statement accepted by nearly all biologists, the President suggested that this vital conclusion was insufficiently appreciated by the general public. He adduced in support the opinion of the late A. A. Macdonell, Professor of Sanskrit at Oxford. The professor, who spoke both English and German as they are spoken by "natives," held that it was impossible for any mature person to learn a foreign language to this extent. Familiarity with a language in early childhood was the essential basis. Yet any human being transported in infancy from his own country to another, and brought up there among the natives, could learn to speak the language as spoken by the inhabitants. Nor would the fact that his forbears, perhaps for many generations, had spoken the language of his birthplace retard or modify his acquisition of another tongue under these conditions. "Educability" could be transmitted; it was a congenital character. But the results of education could not be transmitted. With further reference to the inheritance of acquired characters the President described the elaborate adaptations by which sedentary insects were hidden from their enemies, adaptations evolved not by experience but by avoidance of these enemies. For instance, a twig-like caterpillar, resting on a branch in close proximity to a wren's nest, was unnoticed by the bird, which, however, immediately saw and devoured it when it was placed on a white surface. Sir Edward recalled Lord Lister's presidential address in 1896, a simple and modest record of the great benefactor's life work, and an enduring inspiration to those privileged to be present.

The Sex Ratio

In a paper on the sex ratio Professor F. A. E. Crew, President of the Section of Zoology, maintained that the *Statistical Review of the Registrar-General* was a zoological contribution of surpassing interest. It was, in fact, a progress report of a vast and exciting zoological experiment which we are conducting, scientifically or otherwise, with ourselves as the experimental material. For the correct interpretation of many of its data knowledge derived from the study of lower forms of life was essential. This was particularly apparent in the human sex ratio. In the case of man the male was shown to be less viable than the female. Especially was there a general proneness on the part of male infants to die in greater numbers, irrespective of the cause of death. It was necessary, therefore, to decide what fundamental differences between the sexes might be responsible for this variation in viability. Males differed from females in genetic constitution. The male was heterogametic, the female homogametic, and the higher mortality of the heterogametic sex had been amply demonstrated among wild populations. Males were predominantly catabolic, females anabolic. Males showed a higher metabolism rate, a higher erythrocyte count, a higher haemoglobin value. Experiments in male pigeons showed that their basal metabolism was more easily and more deeply affected by conditions of high temperature or low oxygen supply than that of females. Males of the sword-tailed minnow were more susceptible to alcohol, potassium cyanide, and extremes of temperature. The higher metabolic rate of the male appeared to render him less resistant to unfavourable conditions and more prone to death.

Figures relating to farm animals showed without exception that the males among them shared the relative frailty of the human male, and records of laboratory rats and mice told the same story.

Generally among birds the female was found to be more fragile. Pre-natal death fell more heavily on female fowls. The males of the Japanese turtle dove appeared to be the longer-lived. But in birds the heterogametic sex is the female.

Evidence derived from fish was of less value, for the sex chromosome constitution had not yet been fully determined. A wide range of observations upon insects showed that the male, whether homo- or hetero-gametic was the shorter-lived.

There was nothing unique about the human sex ratio and the factors which operated to distort it were exactly those which produced the same results in other forms of life. The problem must be studied not only in the office of the statistician but also in the laboratory of the experimental biologist and in the open country, with the collaboration of the physiologist and the geneticist.

Heat Production, Nutrition, and Growth

Dr. E. P. POULTON, President of the Section of Physiology, prefaced his address on heat production, nutrition, and growth in man with some practical comments on the question of medical research. In recent years facilities for whole-time research had enormously increased, and such benefactors as Lord Nuffield had largely contributed to this happy state of affairs. It was important, however, to make provision for the research expenses of those willing and able to devote their spare time to such work in the course of teaching and practice. Dr. Poulton stressed the lamentable time lag between the publication of new methods and their general adoption. If a new form of therapy were available in pill form, its widespread application was rapid and assured. If it involved the purchase of apparatus or other difficulties, it might remain neglected for years in many parts of the country. This was attributable to the straitened financial circumstances in so many voluntary hospitals. Money was indeed urgently required for popularizing the results of research. Voluntary hospitals, which naturally hesitated to buy expensive apparatus, would not be slow to use it if provided free of cost. By applying this principle, in the first instance, to the voluntary teaching hospitals, thus accustoming medical students to new methods and new apparatus, the dissemination of the knowledge of fresh advances would spread rapidly throughout the country. Following a

thorough survey of methods of direct and indirect calorimetry, Dr. Poulton advocated the theory of the constant combustion ratio: that carbohydrate and fat are always burnt in the body in a fixed proportion, and the respiratory quotient, when it is high, measures the amount of conversion of carbohydrate into some less oxygenated material such as fat, and, when it is low, measures the reverse change. Such a theory was far from unreasonable, for other quantities associated with the human system—for example, body temperature and hydrogen in concentration of the blood—varied only within comparatively small limits. As an illustration, the story of Cain and Abel suggested that the diet of primitive man was variable in its carbohydrate and fat content, the choice of food being influenced by the exigencies of hunting and cultivation. It was not reasonable to suppose that the complicated processes of human metabolism should be at the mercy of such extraneous circumstances. It was more logical to assume that such processes normally followed well-defined lines of chemical and physical action, while any foodstuff taken in unusual quantity was converted into a form suitable for storage for future use. With regard to standards of metabolism, growth, and general nutrition in children, Dr. Poulton suggested that there was some factor in modern life that tended to promote growth in the children of the wealthier classes. This factor was lacking in all classes fifty years ago, and was still absent among the poorer classes to-day. Since heredity could scarcely be a predominant influence, the cause might be attributed to alteration in the food supply, involving an increase in minerals and vitamins.

Hypnosis and Suggestibility

Before the Section of Psychology Dr. WILLIAM BROWN read a paper on hypnosis, suggestibility, and progressive relaxation. Dr. Brown affirmed that recent experimental and clinical work had established hypnosis on a firm scientific basis. In the treatment of patients the employment of hypnosis resulted in a more rapid and more pronounced induction of relaxation. It was important that any suggestions made to patients in the hypnotized and relaxed state should be positive in character, tending to increase normal vitality and vigour. By this means concentration, memory, and mental powers could be improved, and inhibitions and the fear of failure removed. With regard to variation in susceptibility to hypnotism, Dr. Brown stated that cases of idiopathic epilepsy and *petit mal* were not responsive, and that induction was difficult in persons suffering from extreme fatigue. Alcoholism and scopolamine increased susceptibility, while cases of so-called hysterical epilepsy were especially amenable to hypnotic treatment. Recent work in the United States had shown that new conditioned reflexes could be built up more rapidly and thoroughly under hypnosis than in a normal state. This opened up the possibility of improving the digestive and excretory functions, by extending the power of the will to influence involuntary actions. The therapeutic hypnotist must not be regarded as dominating his patient, but rather as using his influence to inspire confidence and faith. Dr. Brown compared this relationship with that of people and leaders in political affairs.

"Whatever opinions may be held with regard to the political aims of the Fascist countries, there can be no doubt that the methods adopted in Germany and Italy of attaining efficiency as a nation under individual leadership find a great deal of support in modern psychology. It is a mistake to suppose that the followers in these countries are slaves, copying their leader from a motive of fear or in cringing submission; rather do their own self-assertive and aggressive tendencies become liberated in the process, and their heightened enthusiasm and confidence in their leader and his resources make what might have been a timid, panic-stricken crowd into a powerful army, race, or nation."

Local News

ENGLAND AND WALES

Pharmaceutical Society's New Home

Plans for the new home of the Pharmaceutical Society of Great Britain have been passed by the London County Council, building operations will start shortly, and the Society expects to enter into occupation in 1939. The site is the north side of Brunswick Square, overlooking the Foundling grounds, and within five minutes' walk of Upper Woburn Place and the British Medical Association House. The architect's perspective shows that a spacious and dignified building is in contemplation. It will have six floors, and will embody an assembly hall, library, lecture theatres, laboratory accommodation and class rooms, council chamber and committee rooms, and full provision for the administration and publication departments, which are at present rather scattered in Bloomsbury Square. Chiefly with a view to harmonizing with the Victorian character of the new locality, the façades will be of brick, with an unusual and pleasing treatment of the principal frontage. To the right of the vestibule on entering will be the assembly hall, extending to the height of two floors and seating from 350 to 400 persons; to the left will be the library, also two stories in height, with embayments in which small tables for readers will be placed. Directly facing the vestibule will be a lecture theatre, accommodating 250, with provision for up-to-date cinematograph and other demonstrations. This will be flanked on each side by an open court, permitting cross-lighting of the assembly hall and library. A members' lounge and writing room are also to be provided, and on an upper floor council and committee accommodation. The Pharmaceutical Society is more than a professional body: it incorporates a college, which is a school of the University of London in the Faculty of Medicine, with 100 students, and to this college will be devoted the whole of the third and fourth floors in the new building. There will be a large dispensary, departments for advanced and physical chemistry, bacteriology, and research, a small-scale manufactory, and a galenical department. Tutorial and service rooms, a second lecture theatre, a curator's room, staff rooms, and workshops will complete the provision for the school. Examination rooms are to be placed against the respective departments throughout. The top floor is to be devoted to pharmacological research, with a nutrition department, various animal rooms, and histological and chemical laboratories. Another department for which provision is to be made is pharmacognosy, or the science of crude drugs. Altogether the building will form another conspicuous addition to the collegiate and research centres which are multiplying in Bloomsbury within a half-mile radius of the central tower of the University now approaching completion.

L.C.C. Hospitals and Health Services

A year ago the London County Council approved a proposal to engage, for an experimental period of twelve months, two part-time obstetricians and gynaecologists for duty at four selected hospitals. The experiment has proved satisfactory, and the scheme is to be extended to certain other hospitals with large and growing maternity and gynaecological units. The hospitals participating are Dulwich, St. James, Lewisham, St. Giles, St. Alfege's, St. Mary Islington, Archway, and Highgate. The capital expenditure on hospital services under the London County Council for the year 1937–8 is estimated at £650,000, the same amount as last year, but greater than any other previous year. The many important schemes of extension

and development authorized by the Council and in process of being carried out include several for the provision of additional accommodation for patients, new nurses' homes and extensions of existing homes, and various other plans for improving present conditions. A sum is included for preliminary expenses in connexion with the new general hospital of about 500 beds to be erected on part of the site of St. Benedict's Hospital, Tooting, to meet the demand for additional accommodation in the south of London. The estimated cost of the maintenance of L.C.C. hospitals for 1937–8 is £5,395,820, some £200,000 more than the estimated expenditure for 1936–7. The after-histories of tuberculous patients five years after they have been discharged from L.C.C. institutions are published from time to time. The latest survey deals with patients who were discharged in 1931. The number of adult patients discharged from residential institutions in that year was 4,368. In 554 cases the diagnosis of tuberculosis was not confirmed, 344 cases could not be traced, and so the number of cases investigated was 3,470. Of the early cases of pulmonary tuberculosis 77.3 per cent. were alive after five years; of the moderately advanced cases, 44.1 per cent.; of the advanced cases, 7.8 per cent.; and of the cases of surgical tuberculosis, 74.1 per cent. During the same year 884 children were discharged, and a report is available as to 595 of these (170 pulmonary and 425 non-pulmonary cases). Of the early pulmonary cases 10.3 per cent. had died; of the moderately advanced 66.7 per cent., and of the advanced all had died; of the non-pulmonary cases 8.5 per cent. had died. The number of patients under reception orders in the L.C.C. mental hospitals at the end of the last six-months period (March, 1937) was 21,013. During the six months 443 were discharged recovered, 334 relieved, and 81 not improved, while 669 had died. The number of voluntary patients in residence was 877, and the number of temporary patients 37.

Food Investigation

The Report of the Food Investigation Board for 1936 states that the year has been one of great activity, marked especially by the meeting of the British Commonwealth Scientific Conference and by the Seventh International Congress on Refrigeration. An investigation of the identity and properties of the proteins of muscles has resulted in the isolation of a new fraction, myoalbumen, which is interesting on account of its low iso-electric point (3.0 to 3.5). Myoalbumen constitutes 1 per cent. of the soluble proteins of rabbit's muscle. The report for 1935 referred to the high electrical resistance of the carcasses of pigs which had been overheated before slaughter (*Journal*, October 31, 1936, p. 877). It has since been found, in the course of experiments carried out for the Pigs Marketing Board of Northern Ireland, that the hams made from such carcasses show an unusually high incidence of taint. Conversely, low electrical resistance of the muscular tissue before curing is generally associated with a low incidence of taint. Thus it appears probable that measurements of the electrical resistance of the uncured carcass may be of use in forecasting the incidence of taint in hams. It has been established that herrings cured with much less salt than is now employed in the trade keep well for six months at the usual storage temperature of −3° C. Experiments in progress point to the possibility of small amounts of formaldehyde being present in bound form in the flesh of fresh marine fish, and, to a greater extent, in salt-cured and dried fish. The origin of the formaldehyde is being investigated. The rancidity which develops in herrings' fat during cold storage is due to certain enzymes, which are activated by common salt. In the case of fresh herrings, brine-frozen and subsequently well washed, only slight oxidation of the fat was observed after six months' storage in boxes at −28° C.; with smoke-cured fish lowering the accepted storage temperature (−8° to −14° C.) to −20° to −28° C. has been followed by an improvement in the quality of the fish, due to a retardation of deterioration. The report also records a special method, introduced in Belgium, applicable to the commercial cold storage of hot-house grapes, whereby water is supplied to the bunches during storage. Laboratory trials of this technique have shown promising results in the case of English muscats. A comprehensive series of experiments has proved that Victoria plums may be stored for three to four weeks at a temperature of 32° to 34° F. If the fruit is sufficiently mature when picked it ripens well after cold storage at any temperature from 50° F. If picked too green a really good quality cannot be attained, but an improvement in both colour and quality may be produced by ripening at 70° F. The report also mentions the possibility of increasing the home production of pears, which respond even more favourably than apples to gas storage. The value of pears eaten annually in the United Kingdom is roughly £2,000,000. The proportion of home-grown pears was 29 per cent. in 1934 and 13 per cent. in 1935, good and poor years respectively from the growers' point of view. It is thus apparent that there is scope for a large increase in home production.

N.S.P.C.C. Annual Report

The annual report (1936–7) of the National Society for the Prevention of Cruelty to Children records a slight increase in the number of cases reported to the society during the year. This increase was largely due to cases in which the parents of the children concerned came voluntarily to ask the advice of the society with regard to their domestic problems. The report comments on the tendency of the general public to express dissatisfaction with the adequacy of the sentences imposed in cases prosecuted by the society. It is pointed out, however, that such penalties as heavy fines or terms of imprisonment, unless accompanied by the transfer of the legal custody of the children, bear as heavily upon the children as upon the parents. Also it must be remembered that the really severe part of the sentence is contained in a decision to deprive parents of the custody of their children. The report states that the society is deeply sensible of the care and thought given to these cases by the justices, and of the wisdom and helpfulness of their decisions. An unsatisfactory feature of the year's work is the decrease in the number of cases reported by the general public. Many of the worst cases could have been brought to the society's notice by neighbours at an earlier date, a course of action which would have shortened the unnecessary sufferings of a large number of children. During the year the medical department dealt with 2,573 cases, of which 463 required orthopaedic treatment for various deformities.

SCOTLAND

Royal College of Physicians of Edinburgh

The annual report (1936) of the Laboratory of the Royal College of Physicians of Edinburgh records the publication of nine papers during the year under review. Work on the toxic effects on animals of substances in common industrial use has been carried out in collaboration with Dr. T. Ferguson and Dr. B. Wylam of the Department of Health for Scotland. The results of a study of the effect of trichlorethylene on rats appear to show that this substance exerts a deleterious effect at least upon the liver and the bone marrow. Whether this effect upon rats is of significance for man depends entirely upon the concentration of the substance in the air breathed by those exposed to it. It is hoped, following improvements envisaged in the special apparatus employed, to discover an answer to the question whether trichlorethylene and other substances may effect the health of workers. Mention is also made of epidemiological statistical researches, a review of the results of anti-rabic treatment,

a study of the pathology of the breast, and an investigation of calcium deposits. The report records with regret the death of Mr. T. D. Hamilton, who was associated with the laboratory for many years. Mr. Hamilton's work was chiefly concerned with section technique, the morphological aspects of cancer, and the establishment of standards in blood examination.

New Glasgow Professor

Professor George Barger, who at present occupies the chair of chemistry in relation to medicine at Edinburgh University, has been appointed regius professor of chemistry at the University of Glasgow in place of Professor George Gerald Henderson, who has resigned as from September 30. Professor Barger, who was born in 1878, was a Fellow of King's College, Cambridge, from 1904 to 1910, and head of the chemical department, Goldsmith's College, from 1909 to 1913. In the latter year he became professor of chemistry at the Royal Holloway College, University of London, and a year later chemist on the staff of the Medical Research Committee. In 1919 he was appointed to the newly instituted chair of chemistry in relation to medicine at the University of Edinburgh. Professor Barger has carried out much research in organic chemistry, and is the author of several books dealing with this subject, including one on *Organic Chemistry for Medical Students*, published in 1932, and a work on *Ergot and Ergotism*. In 1928 he delivered the course of Baker Lectures at Cornell University, and of Dohme Lectures at the Johns Hopkins University in the United States. He was awarded the Hanbury medal of the Pharmaceutical Society in 1934 and the Longstaff medal of the Chemical Society in 1936.

IRELAND

Health of Belfast

Four principal subjects are dealt with in the report on the health of the county borough of Belfast for 1936 by Dr. C. S. Thomson, medical superintendent officer of health. An account is first given of the work of mosquito control in the three prolific breeding grounds in the area. Dr. Thomson says that mosquitos are not only a serious annoyance but a danger to health in view of the possibility of sepsis following upon bites. The salt marsh mosquito (*Aedes detritus*) is chiefly responsible. A staff of five men is kept continually at work oiling the breeding places with waste motor oil collected from city garages. Another new health enterprise is immunization against diphtheria, a work which started in October last, but has been so vigorously undertaken that within little more than six months 4,215 children completed the immunization course. The annual notifications of diphtheria in Belfast in the last seven years have varied from some 400 to 1,200, and the deaths from thirteen to fifty-five. Dr. Thomson looks forward to an immunization rate during the next five years of about 27,000 a year. On the subject of housing he points out that Belfast is comparatively a modern city, without the large areas of wretched housing to be seen elsewhere; nevertheless there are some 2,000 houses which should be demolished, and it is hoped to accomplish this clearance by degrees. An encouraging report is given on maternity and child welfare. In the hospitals and municipal clinics 5,165 first ante-natal examinations were made, and there were 17,885 subsequent visits, plus an unascertained amount of private ante-natal supervision by medical men. The birth rate was 21.2 per 1,000, and the death rate 14.2, the one slightly below and the other slightly above the average of the last ten years. The infant mortality rate was 101 per 1,000 births.

INDIA

Research at the Calcutta School of Tropical Medicine

In 1936 the research investigations at the Calcutta School of Tropical Medicine were on malaria transmission, indigenous drugs, drug addiction, medical mycology, helminthology, anaemia of women, kala-azar, cholera, and special studies of epidemic dropsy, leprosy, and filaria. A case of agranulocytosis was discovered in Calcutta, one of the first to be reported in India. The patient had been in the habit of taking an amydopyrine derivative, and succumbed before nucleotide therapy could be tried. In the annual report of this institution for 1936 it is mentioned that the bacteriophage-therapy investigation as regards cholera has now been completed, 1,748 patients having been watched. Analysis of the results indicated that this procedure in cholera has a definite therapeutic value. Attempts are in progress to determine the mode of action of quinine and atebrin on *Plasmodium knowlesi*. It has been shown that a 1 in 50,000 atebrin solution can destroy the parasites even when the infection is very heavy. The smears of blood kept in contact with atebrin for twenty-four hours showed degenerative changes in them, and a susceptible host (*Silenus rhesus*) inoculated with this mixture was not infected. But a much stronger solution of quinine (1 in 10,000) failed to kill the parasites. In the pharmacological department work was continued on the pharmacology of snake venoms and camphor compounds, chemotherapeutic studies were performed with regard to the action of atebrin in monkey malaria and the atebrin–plasmoquine combination in human malaria, and new and efficient methods were elaborated for the estimation of atebrin and lecithin in the blood. A number of inorganic compounds used in Hindu medicine were investigated, as well as many medicinal plants. The data on hemp drug addictions are now being analysed. Important research work has been conducted on the distribution of blood groups in the Indian Army, and a technique has been evolved for the determination of blood groups from stains. A clinical trial of a special vaccine prepared from virulent cultures of two types of pneumococcus isolated in Assam gave encouraging results clinically; in a series of twenty-three cases there was only one death. It has been shown also that there is a type of severe macrocytic anaemia prevalent on the east side of India, which, unlike the microcytic anaemia, can be cured by the giving of a rich well-balanced diet. The previous work of Professor L. E. Napier had shown that the microcytic anaemia common among coolies was uninfluenced by the introduction of a good diet, and was cured only when iron was given. In collaboration with Dr. Wilson an investigation is being continued to ascertain which particular dietetic factor is responsible for improvement in the macrocytic cases. Leprolin and diathermy have been tried for the relief of neuritis in leprosy, as well as the injection of colloidal copper, cobra venoms, and hydnocarpus preparations around the nerves and into the affected areas. A careful study of the tuberculoid type of leprosy has been made, and its recognition and differentiation from ordinary leprous infiltration in the skin has been found to be very important from the point of view of prognosis. No evidence has yet been obtained of the growth of lepra bacilli in tissue cultures. It has been shown that there are patients suffering from cholera and passing typical rice-water stools in whom, despite very extensive research, only non-agglutinable vibrios can be found. In diabetic subjects it has been found that the degree of hypercholesteraemia is a much more satisfactory index of the severity of the disease than is any one of the other single factors, including hyperglycaemia. It was only cases with marked hypercholesteraemia that had complications such as arteriosclerosis and retinitis. Sexual immaturity seemed to be very closely associated with diabetes.

Madras Government Ophthalmic Hospital

During 1936 treatment was given to 31,609 out-patients at the Madras Ophthalmic Hospital and there were 4,391 new in-patients. The surplus sick were as usual accommodated in the verandas. Twenty-four beds are available for European and Anglo-Indian patients, and 146 for Indians, so that the accommodation is at times very strained. In the twelve months under review 2,954 patients were discharged as cured and 1,197 as relieved; there were eight deaths. The commonest pathological conditions were senile cataract; chronic, angular, and acute conjunctivitis; glaucoma; errors of refraction; corneal opacities and ulcerations; pterygium; diseases of the eyelids; and presbyopia. The large range of eye disorders dealt with renders this institution a particularly valuable centre for the training of medical students and postgraduates, of whom there were 231 and twenty-three respectively. The daily average attendance of patients was rather smaller than in 1935, and there were consequent reductions in the expenditure on drugs and dietaries. Establishment costs increased slightly but less was spent on the buildings. The number of surgical operations performed in 1936 was 8,162. Lens extractions were common, and other procedures included operations on the lachrymal sac and nasal duct and on the eyeball and ocular conjunctiva. Cauterization of the cornea was another frequent procedure, as was also the treatment of prolapsed iris. Radium treatment was given for certain ophthalmic new growths with considerable success.

FRANCE

[FROM OUR CORRESPONDENT IN PARIS]

International Medical Meetings

The summer of 1937 stands out as remarkable for the number and importance of the international medical meetings held in Paris in connexion with the Exhibition. There must have been scores of such meetings, and some of the doctors who attempted to attend several may well be excused if the orgy they indulged in has left them a trifle confused although enlightened. Some overlapping was, of course, inevitable, but on the whole the organization of these meetings has given satisfaction and also the impression that the Gallic taste for orderliness is as keen as ever. At the cost of making what may seem invidious distinctions, reference will be made here to only a few of these meetings.

Under the presidency of Professor Laignel-Lavastine, the first International Congress of Neo-Hippocratic Medicine enjoyed the patronage of the Paris faculty of medicine and was attended by many of the most distinguished members of the medical profession, the President of the Academy of Sciences, the President of the Academy of Medicine, the doyens of the faculties of medicine and pharmacy of Paris, and many others. The sixteenth annual International Neurological Congress was opened on July 8 under the auspices of the faculty of medicine and the presidency of Professor Barré of Strasbourg. Altogether nine main reports were presented whose principal theme was pain as a neurological problem.

QUACKERY AND PUBLIC HEALTH

Les Journées Internationales de la Santé Publique occupied half a score of days and embraced a wide range of subjects grouped under ten different sections. Special mention may here be made of the sixth section, which dealt with the merchant service and to which the League of Red Cross Societies gave its patronage on account of its interest in the health of the merchant seaman. A most interesting communication was made to this section by Dr. Bernard of Belgium, who discussed the problem of wireless communications between doctors on shore and ships not carrying a doctor. These Journées included a discussion on quackery, which was held on July 7 under the auspices of the International Committee for Combating Charlatanism. Many of the speakers followed conventional lines, but there was a touch of both unconventionality and audacity in the suggestion of one speaker that the out-and-out quack might be less of a danger to the community than the fully qualified doctor with the "soul of a charlatan." When such a man "covered" unqualified medical practice the public was sore put to it to escape fleecing. Another speaker advocated the complete prohibition of written and wireless publicity in favour of quack treatment, this prohibition to be extended to the cinema and luminous advertisements. Publications not exclusively devoted to medicine or pharmacy were not to advertise prophylactic or therapeutic devices, and touting through the mail was to be forbidden. It was also proposed that a quackery commission should be appointed, and that on it should be represented the Conseil Supérieur d'Hygiène and other important bodies. Yet another suggestion concerned the supervision and regulation of titles and claims to special knowledge of certain subjects, the term "specialist" to be earned, not just self-bestowed. The most reassuring feature of this discussion was the tribute paid to the sickness insurance scheme—Assurances Sociales.

From July 19 to 25, and in the presence of a distinguished gathering, the International Congress of Mental Hygiene was held at the Centre Marcellin-Berthelot. The president was Dr. Toulouse, and a well-known figure was Mr. Clifford Beers, who has done so much to promote the cause of mental hygiene throughout the world. The fact that the President of the Republic was represented at this congress was only one of many signs indicative of its importance.

The New Minister of Public Health

M. Henri Sellier, Minister of Public Health in the Blum Cabinet, has been succeeded by M. Marc Rucart, whose recent public utterances have inevitably reflected the sombre condition of French finance at the present time. Sellier may have been an expensive Minister of Public Health, but what a driving and enterprising force he proved himself to be! It is to be feared that in many fields he may have put his hand to the plough in vain because the Blum Government had not taken Micawber's law of balanced accounts sufficiently to heart. It is to be hoped, however, that the reforms connected with prostitution and venereal disease will yet materialize, at any rate in so far as they do not drain the public purse too openly. Rucart's future achievements must be judged with a leniency inspired by knowledge of the limited financial means at his disposal.

G. S. Hall (*J. Neurol. Psychopath.*, January, 1937, p. 262) points out that chronic subdural haematoma is not a rare clinical entity, and should be distinguished from the acute type. He records four cases which he encountered in one year. Increased intracranial pressure did not occur in all the cases, but it was found that the symptoms depended on the degree of increase in the intracranial pressure present. This in turn depended on the age of the patient, the younger patients having the highest pressure. A review of the literature supports the view that the clinical picture of the condition and the occurrence of raised intracranial pressure are both determined by the age period in which the lesion develops. In infancy the pressure is so high that the condition mimics "idiopathic" hydrocephalus. In middle life the picture is one of increased intracranial pressure, while in later life the condition is difficult to recognize, as the pressure is not raised at all.

Correspondence

The Radiology of Megacolon

SIR,—Dr. John R. Wylie in his letter to the *Journal* of August 21 states that the normal variations in tone of the alimentary tract have been frequently misunderstood by the radiologist. This is doubtless a result of insufficient study of Sherrington's fundamental work on the postural tone and postural length of involuntary muscle, without which it is impossible to interpret the significance of the considerable changes which occur in the size, shape, and position of the stomach and colon in every individual in the course of a single day. There is, however, no excuse for ignorance on the subject since the publication of Dr. A. E. Barclay's *Digestive Tract*. In his criticism of my views on the interpretation of the information given by an opaque enema in cases of megacolon Dr. Wylie himself shows a want of familiarity with Sherrington's work.

The tone of the stomach can be judged from the level of the upper limit of its contents when viewed at *x*-ray examination after an opaque meal. The size of the latter is immaterial, as the tone varies with the bulk in such a way that the intragastric pressure remains constant. It is, however, customary to give a comparatively small meal, as most people would find it difficult to take a large quantity of the opaque mixture. If the tone of the stomach were judged in a manner corresponding with that advised by Dr. Wylie for the colon, the patient would have his stomach filled through a tube with a thin suspension of barium under a constant (and presumably low) pressure until he felt full enough to vomit. This would, however, show nothing more than the distensibility and maximum capacity of the stomach, which have nothing whatever to do with its tone.

The postural tone of the colon, like that of all other hollow viscera, adapts itself to the volume of its contents, with the result that the pressure within it remains approximately constant. The diameter of different parts of the colon and its total length show great variations during the day. Thus, in the early morning the pelvic colon is full and its postural tone is low, so that its length and diameter and consequently its capacity may be sufficiently great to hold all its contents. But immediately after defaecation the pelvic colon is empty; its postural tone is then maximal and its lumen entirely obliterated. The appearance of the pelvic colon after a barium enema given as recommended by Dr. Wylie shows its size with minimal postural tone if time is allowed for complete relaxation to occur. But to say that it gives a good estimate of bowel tone is quite meaningless, as the tone depends on the volume of its contents, varying between a maximum when it is empty, an average minimum when it is full just before defaecation, and an extreme minimum, corresponding with the greatest distension it has ever experienced, when it is fully relaxed after an opaque enema. Consequently, in both children and adults with megacolon, an opaque enema always shows a greatly dilated pelvic colon, even years after complete recovery, whether the result of medical treatment or sympathectomy. An opaque enema is therefore valueless as an estimate of the success of treatment. The appearance of the abdomen is the best guide in children, but an opaque meal and the sigmoidoscope can also give valuable information. The latter show that the postural tone of the individual muscle fibres of the circular and longitudinal muscle coats, and with them the diameter and length respectively of the pelvic colon, may have returned to normal, even when an opaque enema shows that the colon is still capable of being greatly distended if fluid is slowly run into it from below, a condition which bears no relation to anything occurring under normal conditions of life.

The radiological examination of the renal pelvis gives a good illustration of the difference between tone and distensibility. Intravenous pyelography shows the size of the pelvis under natural conditions, the tone of its musculature and therefore its size being adapted to the amount of urine secreted at the moment. On the other hand, retrograde pyelography shows its size when distended to a degree sufficient to cause slight discomfort. In early cases of intermittent hydronephrosis intravenous pyelography reveals a pelvis of normal size, but the retrograde pyelogram reveals an enlargement corresponding with the size of the pelvis during an attack—that is, it affords a measure of its distensibility, which depends upon the maximal size it has hitherto attained and not its average size under normal conditions between attacks. The intravenous pyelogram corresponds with the appearance of the colon after an opaque meal, the retrograde pyelogram with that after an opaque enema.—I am, etc.,

ARTHUR F. HURST.

New Lodge Clinic, Windsor Forest, Sept. 3.

Cataract Extraction

SIR,—Mr. Basil Graves gives in his interesting paper in the *Journal* of August 14 (p. 319) a description of his technique of cataract extraction during narcosis. In preference to his rather complicated method I adopt the simplest possible (*Arch. Ophthal.*, Chicago, 1934, **2**, 102). Briefly, this consists of the instillation of five drops of cocaine thirty minutes before operation; suture fixation; retrobulbar injection of novocain-suprarenin; lobular incision with a conjunctival flap; iridectomy; and finally intracapsular extraction by the direct method without tumbling the lens, using Arruga forceps. Loss of the vitreous has followed in only 2 per cent. of cases, and an unfavourable result in only 0.5 per cent. "Expulsive haemorrhages" in the last ten years have occurred in only four instances out of 5,000 cataract extractions.—I am, etc.,

Budapest, Aug. 19. EMILE DE GRÓSZ.

SIR,—I have read with much interest Mr. Basil Graves's account of his method of narcosis for eye operations—in particular cataract extraction. A certain amount of experience in eye work, from the point of view of a civil surgeon in India, enables me to appreciate the great advantage of something approaching general anaesthesia in operating for cataract if the co-operation of the patient can be dispensed with, as in Mr. Graves's method. Unconsciousness of the patient is a gain not only to him, but also to the surgeon. I know from experience that the tendency to tremor in fine work of this description is much increased by the knowledge that the patient is nervous, and perhaps even suffering some pain.

My interest in the subject is heightened by the fact that Mr. Graves operated on me for cataract last year, and again, on the other eye, nearly three months ago. On the former occasion, nembutal being used, I was conscious, but went to sleep immediately after the operation, and slept soundly throughout the night. During the second

operation, following the administration of omnopon and rectal paraldehyde, I was completely unconscious, and I slept as before without any intermission until the following morning. In both cases the operation was at about 5 p.m. The ultimate result in both eyes leaves nothing to be desired. It may be said, admittedly, that I am not an unprejudiced observer. I am a very grateful patient. But my experience of what seems to me a most useful revolution in the operative treatment of cataract may be of interest.—I am, etc.,

Bournemouth, Aug. 25. A. HOOTON.

The Place of Pharmacology in the Medical Curriculum

SIR,—Now that most of the medical institutions, both in England and India, will soon adopt the revised medical curriculum, and criticisms from different sources have been recorded, may I be permitted to make a few observations.

In none of the criticisms which appeared was the subject of pharmacology discussed. No one can deny that to be a successful practitioner, or even a specialist, one must know the subject of pharmacology and its practical application in disease. About a quarter of a century ago pharmacology was taught with therapeutics, and the names of men like Sir Lauder Brunton, Mitchell Bruce, Sir Thomas Fraser, and Professor Ralph Stockman naturally come to mind. Fortunately, Professor Stockman is still with us. These professors had clinical beds, and were thus able to impress on the students the practical application of the knowledge of pharmacology in disease. As time went on the science of pharmacology developed, and it was thought that the subject should be taught with experiments so that the student would be able to visualize the action of drugs on animals. This no doubt made the teaching of pharmacology more interesting, and it was separated from therapeutics, which was taught as a detached subject. The result was that while a student, or for the matter of that a junior practitioner, was conversant with the pharmacological action of a drug, he was hopelessly ignorant of the practical application of that knowledge in therapeutics. While more attention was paid to the teaching of pharmacology as a scientific subject pure and simple, the teaching of therapeutics was neglected, and no proper attention was given to the teaching of materia medica proper—that is, prescription writing, incompatibility, etc. No one will question the value of experimental work, but pharmacology is not all experiments, and it has to be conceded that the primary object of teaching the subject is to enable the student to appreciate the rational basis of therapeutics, and the best way to estimate the practical value of this form of teaching is to see how far we have been able to attain the objective we have in mind. To teach the different subjects in separate watertight compartments is a great mistake, and the modern teaching entails that each of the basic subjects should be taught as an applied subject.

Having taught pharmacology for over twenty years, and also having had the opportunity of coming into contact with students in different parts of India, I am convinced that to teach the subject as we have been doing will lead us nowhere, and that it is time we faced facts and rearranged the method of teaching on the basis of our past experience. It will be interesting to hear the experience of other teachers on the subject and to have their constructive suggestions. To my mind the subject of pharmacology should be taught in the clinical period, and therapeutics should be closely co-ordinated with it. Moreover, pharmacology and therapeutics should be taught by the same teacher, who should be in charge of clinical beds.—I am, etc.,

B. N. GHOSH, F.R.F.P.S.Glas.,
Calcutta, Aug. 23. Professor of Pharmacology, Carmichael Medical College.

The Teaching of Medicine

SIR,—Much of Sir David Wilkie's article in your Educational Number (September 4, p. 439) is as pertinent to other branches of teaching as to his own, and his views invite more than our tacit acceptance. To teacher and student alike the implication of these words is a call: "Our object is to educate rather than to instruct. . . . The greater the co-ordination and harmony . . . the more complete and generous will be the education." Co-ordination and harmony are conspicuously lacking in the world to-day, and each of us must make his choice between a course of discord and one along which harmony can be restored to our lives and those of our fellows. The latter can be attained at the cost of a complete revolution in oneself.

It has come home to me lately that my own teaching has often been dishonest, and the sequel to such dishonesty is interesting. A few evenings ago at my own fireside I invited from a recent graduate of my own school his views on the clinical side of medical teaching. What I learned is not difficult to guess; when I had taken considerable trouble over the preparation of a clinic the student derived considerable benefit from it, but when conflicting interests or self-assurance had prompted me to teach on a patient whom I had not made the subject of careful study, however simple the condition—perhaps a straightforward valvular heart disease—the student's time and my own were largely wasted. I discussed with my friend some of the difficulties that students of medicine have, and there can be little doubt that one upsetting feature of teaching is the disharmony of view, it may be on nomenclature, on classification, or on the significance of a particular sign, on anything in fact that the student encounters in different teachers. When I say to myself "I do not agree with So-and-so's opinions or methods" I am putting a stumbling-block in the student's way, and there may be no obstacle to my acceptance of So-and-so but my own self.

My friend and I also shared a conviction that there is too wide a gulf between the teacher and the student. If, by aloofness which I hope will call forth respect, or by witticism at a student's expense, or by sarcasm, which I think is gentle but which he knows to be cruel, I help to establish and maintain that gulf, I cannot hope to send that man into the world at the end of his course equipped to build bridges across the hundred and one gulfs he will encounter between himself and his fellows. If I am teaching students and there is disharmony in my own life, their education, so far as I am responsible for it, will assuredly be neither complete nor generous. I cannot establish harmony between myself and my fellow, whether student or teacher, by condescension or patronage, but if he and I will allow our working day to be permeated by a spirit of fellow-discipleship of the Highest Teacher of all under His guidance we can play our part in helping our profession to take its appointed place in the rehabilitation of this tottering world.—I am, etc.,

Dundee, Sept. 5. JAMES M. STALKER.

Medical Records

SIR,—It would surely be of the utmost value to everybody concerned if a central record office could be established in London to pool information relating to investigations carried out upon patients in hospitals, operations performed, etc. At the present time a patient will often pass through an elaborate series of investigations in one hospital, and then in the course of months, or it may be two or three years later, will go to another hospital, where a similar series of investigations are carried out. Similarly, a patient may have a laparotomy performed for diagnostic purposes, and at a future date, as a result of a recurrence of the symptoms, may seek advice at another hospital where, lacking precise information as to the results of the former investigation, another laparotomy is performed. This is particularly true of the patient who has what may be termed a neurotic constitution with a tendency to autonomic and endocrine imbalance, which results in various forms of physical dysfunction with symptoms the exact significance of which it is extremely difficult to assess. Such patients have a tendency to wander from doctor to doctor and from hospital to hospital. It is obviously inadvisable to give the patient a written account of the results of investigations, operative procedures, and the like, as this in itself might constitute a basis for the development of a hypochondriacal outlook in a predisposed person, and would often cause unnecessary suffering.

All records, therefore, are at present buried deep in the files of the individual hospital. It is true that in theory at least it is possible to obtain some information by communicating with the registrar, but this is seldom complete, and when it has to be collected from various sources involves a delay which often renders it of little value. The existence of a central record office where a brief report of the investigations, surgical procedures, diagnosis, and prognosis could be filed and obtained by any general practitioner or any other hospital would be a labour-saving device of the first order. It would, moreover, form an invaluable body of information available for research purposes. The expense of setting up and maintaining such a central co-ordinating bureau would admittedly be considerable, but the saving to the hospitals using it would also be on a vast scale both in time and money, and the advantage to the public and to medical science generally would be incalculable. It could be financed partly by means of contributions from the hospitals using it, by payments made for information given in respect of individual patients, by trust and charitable funds, and possibly by Government and local authority grants.—I am, etc.,

London, W.1, Aug. 25. DORIS M. ODLUM.

Sulphanilamide in the Treatment of Gonococcal Infections

SIR,—When this remarkable drug, sulphanilamide, was discovered to have a specific action against infections due to the haemolytic streptococcus, the meningococcus, and some other bacteria, it was hoped that it might be effective against the gonococcus. As soon as it was available many authorities in England, Ireland, and on the Continent, including the original makers of the drug, tried its action on gonococcal infections and reluctantly concluded that it was unsatisfactory.

At the instigation of the Therapeutic Trials Committee of the Medical Research Council I tested two series of patients suffering from acute gonococcal urethritis: four cases with prontosil album, the original German preparation, and fifteen with a drug of British manufacture. The results were distinctly disappointing, and other venereologists in this country had similar experiences. More recently Dees and Colston (*J. Amer. med. Ass.*, May 29, 1937) refer to the use of sulphanilamide in gonococcal infections. They concluded that the drug will prove of great value in this disease. The prompt response to treatment in the majority of their cases (nineteen in all), the smooth clinical course, the fact that no complications occurred and that the infection had not progressed, together with the reduction in hospital expenses, impressed them profoundly. The possibilities of sulphanilamide in treating gonococcal infections also formed the subject of discussion at the recent meetings of the American Medical Association at Atlantic City, the American Neisserian Society, also at Atlantic City, and at the American Academy of Pediatrics in New York City. At these conferences many physicians expressed their opinion that the drug could be regarded almost as specific in gonorrhoea as it is in the treatment of haemolytic streptococcal infections.

As a smaller initial dose was given during my previous trials than that used by Dees and Colston, tests were repeated on a third series of twenty acute cases. The treatment outlined by these workers was followed exactly—that is, four divided doses a day, 4.8 grammes of sulphanilamide daily for two days, 3.6 grammes daily for three days, and then 2.4 grammes daily for from four to eight days. No other treatment, either local or general, was used, and, as before, the results were unsatisfactory. To summarize, my experience with sulphanilamide administered orally in the treatment of acute cases of gonorrhoea is that it is ineffective. The drug does not appear to act satisfactorily in combating the gonococcus, however good it may be in some other infections.—I am, etc.,

London, W.1, Aug. 25. T. ANWYL-DAVIES.

Treatment of Giant-cell Tumour of Bone

SIR,—I am grateful for Mr. R. C. Elmslie's letter (*Journal*, August 28, p. 431) on giant-cell tumours of bone, with much of which I am in agreement. There are, however, some points on which more precise information is required, and several inaccuracies must be corrected.

1. That a tumour of bone can only be diagnosed with certainty by a biopsy is self-evident. The practical point, however, is that when a first-class radiologist says that a tumour of bone is a giant-cell tumour the probability that he is correct is such that treatment based on his opinion is completely justified. At the Presbyterian Hospital a mistaken diagnosis is made in about 5 per cent. of cases. Will Mr. Elmslie, or the radiologists, tell us what percentage error they expect? Many do not regard the occasional error as a serious mistake, for the surgical results in such cases are so dismal.

2. It is pleasing to learn that there was agreement that a biopsy should be free and the sections made at leisure. As a pathologist I am acutely conscious that there is not general agreement on this point anywhere, though I believe it to be correct. Among the New York surgeons mentioned Dr. Auchincloss definitely disagrees. It is easy to name other leading surgeons here and abroad who also disagree. The greatest danger of a frozen section is that a diagnosis may be made which is not justified by the preparation, but that does not alter the fact that in many cases the diagnosis from the quick section is quite reliable.

3. I do not think anybody disputes that a giant-cell tumour can be cured by curetting, and it is pleasing that there is no dispute that they can equally be cured by radiotherapy. However, I will indeed be most surprised if there are many who will agree with Mr. Elmslie that surgery is safe and simple while radiotherapy is dangerous. Surely the reverse is true,

and is the reason why most patients will be disappointed that "most surgeons will prefer to keep to the knife." I will refuse to believe that there are competent radiologists who forget that there are such things as skin, muscle, etc., but it is delightful to learn that they can forget that women have genital organs.

Mr. Elmslie completely missed the point of the case I quoted. An accurate diagnosis was made from the original *x*-ray photographs and was acted on correctly. Quite a number, including James Ewing, said that an ideal result would have followed. The lesson learned was not that radiotherapy is dangerous, but that the radiographic appearance of giant-cell tumours undergoing treatment needs to be more generally understood. Radiotherapy is in its infancy compared with surgery, and these lessons have to be learned. Nevertheless, the elaborate follow-up system used by the Americans (which we so rightly admire) does seem to show that except for special cases radiotherapy is the treatment of election. Curetting is not condemned, but it has been observed that it is dangerous to use both local surgery and radiotherapy. Because it is difficult to explain this observation we must not doubt its truth; I have seen it convert a benign into a malignant giant-cell tumour myself. Dr. Haagensen is emphatic about the danger, and the observations were on cases which had a biopsy at the start—and a necropsy at the end. This danger is not an argument against radiotherapy at all. It is an argument for competent radiologists, and if one is not available or is not reasonably sure that the lesion is a giant-cell tumour then the surgeon should rely on himself alone for treatment. It should be needless to add that I did not say that merely cutting into an innocent tumour can render it malignant.

It is evident that there will be two schools of thought on this subject for some time. I have no doubt, however, how I would prefer to be treated myself.—I am, etc.,

Derby, Aug. 28. G. R. OSBORN.

SIR,—Had the summary of my remarks at the discussion which I submitted (on the forms provided) on July 26 been published or consulted in making up the report of the proceedings for the *Journal* of August 7 it would not have been necessary for me to reply to Mr. Elmslie's letter, in which he states that there was general agreement upon three points, for two of these are in direct opposition to the experiences which I there related—namely, (1) that a tumour of bone could only be diagnosed with certainty by means of a biopsy; (2) that an osteoclastoma is capable of cure by the simple and safe surgical procedure of curetting. To show how little agreement existed between us over these points I should like to criticize the report which was printed in the *Journal* of August 7, and for this purpose shall indicate the report in italics and follow each statement with my comments.

1. "*The clinician was becoming increasingly anxious to pass the responsibility of diagnosis on to the radiologist.*" What I said was that, while in some cases the diagnosis on radiographic evidence was definite and could be acted upon by adopting prompt radical surgical procedures, unfortunately there were cases in which the clinical, histological, and radiographic evidence was insufficiently convincing to the surgeon to warrant mutilating surgery, and owing to the poor results of the latter in bone sarcomata the clinician was more and more seeking the refuge of radiotherapy—at any rate until the nature of the lesion had revealed itself. It is well known that for some months following radiotherapy the radiographic appearances of an osteoclastoma suggest that the tumour is extending, but subsequent radiographs show increased consolidation. In spite of this apparent healing I stated that in my experience local resection of a simple tumour was preferable to either *x*-radiation or curetting: the former may leave the patient with destructive effects and pains more serious than the bone tumour, while even after thorough curetting malignant metaplasia of remaining tumour cells may occur. I have published an account (see *Proc. roy. Soc. Med.*, 1937, **30**, 9, and *Brit. J. Rad.*, 1937, **10**, N.S. No. 111) of such sequelae fifteen years after curetting; it has followed curetting of so-called localized fibrocystic disease; we have no proof that similar metaplasia will not occur if the only treatment is radiation. *X*-radiation is probably justifiable only in the case of inoperable tumours, and even with these the results are not very hopeful. The best American results in bone sarcomata were obtained by amputation or resection followed by the administration of Coley's fluid.

Regarding biopsy, I stated that it was in some cases dangerous and misleading, for following trauma, either accidental or surgical, malignant bone tumours appeared to show more rapid growth and metastases were to be detected soon after. In support of the more serious charge of "misleading" I exhibited the radiographs of a number of cases in which the radiographs indicated innocence, but the histology malignancy, and others in which the radiographs indicated malignancy whereas the histology favoured innocence and the subsequent histories had proved the radiographic evidence to be the correct.

2. "*The radiodiagnostic test was not dangerous unless the surgeon refused to intervene when radiation treatment failed.*" In this case the reporter's interpretation is absolutely wrong. When the radiodiagnostic test is applied to an endothelioma of bone (Ewing's tumour) the tumour in some cases responds and the bone may even take on the radiographic characters of normality. Such a response is regarded as evidence that the lesion is a sarcoma and calls for drastic surgical measures in spite of the apparently good response, which, alas, is only temporary and not curative. It can therefore hardly be said that the radiation has failed, or even succeeded, but if the apparent success (not failure) checks or delays surgical intervention the test introduces the element of danger. Surgery is not undertaken for bone sarcomata which have been undergoing frank radiation therapy (not a short test) and failed to respond, except for the temporary relief of pain and removal of a fungating mass: therefore failure to adopt surgical measures when radiation has failed cannot be regarded as dangerous.

Because I was able to show that in some cases either the clinical or the histological or the radiographic examination alone supplied the essential evidence, and that evidence from one or the other of these sources might be inconclusive or misleading, I pleaded for a more intimate co-operation of surgeon, pathologist, and radiologist in all cases.

—I am, etc.,

Birmingham, Aug. 30. JAMES F. BRAILSFORD.

*** It must be pointed out that Dr. Brailsford did not give the summary of his remarks to the reporter at the Meeting, as requested in the directions in the handbook of the Meeting. In the account given in the *Journal* of August 7 (p. 285) of Dr. Brailsford's remarks six of the nine points raised by him were correctly reported, two were records of the impressions of the reporter, and the third (No. 2 in Dr. Brailsford's letter) was apparently misleading.—ED., *B.M.J.*

Bilateral Artificial Pneumothorax

SIR,—While disagreeing with much that is said in Dr. Crocket's article in the *Journal* of August 7 (p. 261), particularly with the technique applied, I feel that he has done good service in drawing attention to bilateral pneumothorax. But as he has not given any figures perhaps those of bilateral pneumothorax undertaken at the Cheshire Joint Sanatorium might be of interest. The classification of bilateral artificial pneumothorax I adopted is as follows:

PRIMARY BILATERAL

(*a*) *Immediate.*—Cases with bilateral disease at the initial examination and in which a double artificial pneumothorax

(A.P.) is at once prescribed, both sides being collapsed as soon as possible. If one side cannot be collapsed the case is transferred to Choice 3 of unilateral A.P.

(*b*) *Delayed.*—Cases similar to group (*a*) but in which only the more severe side is collapsed at once and expectant or other treatment adopted for the contralateral lung. Later this lung is unaltered, or worse, and therefore collapsed, thus giving a bilateral A.P.

Primary Bilateral

Year of Induction	No. of Cases	Years since Induction	Alive		Alive, March, 1937	
			No.	Per cent.	No.	Per cent.
1930–4 inclusive	92	2	62	67.39	54	58.7
1930–3 „	65	2	41	63	33	50.76
		3	37	57		
1930–2 „	32	2	17	53	11	34.37
		3	15	47		
		4	12	37.5		

SECONDARY BILATERAL

A group of cases initially considered as a good selection for unilateral A.P., but later an acute spread in the contralateral lung occurs and this side is collapsed concurrently with the other.

Secondary Bilateral

Year of Induction	No. of Cases	Years since Induction	Alive		Alive, March, 1937	
			No.	Per cent.	No.	Per cent.
1929–34 inclusive	33	2	23	70	21	63.63
1929–33 „	26	2	16	61.54	14	53.84
		3	15	57.7		
1929–32 „	16	2	9	56.25	7	43.75
		3	8	50		
		4	7	43.75		

Primary and Secondary Bilateral (Combined)

Year of Induction	No. of Cases	Years since Induction	Alive		Alive, March, 1937	
			No.	Per cent.	No.	Per cent.
1929–34 inclusive	125	2	85	68	75	60
1929–33 „	91	2	57	62.63	47	51.64
		3	52	57.14		
1929–32 „	48	2	26	54.16	18	37.5
		3	23	47.91		
		4	19	39.58		

CONSECUTIVE OF SUCCESSIVE ARTIFICIAL PNEUMOTHORAX

Where an artificial pneumothorax has been completed on one side and later an A.P. has been established on the contralateral.

Consecutive

Year of Induction.	No. of Cases	Years since Induction	Alive		Alive, March, 1937	
			No.	Per cent.	No.	Per cent.
1926–34 inclusive	34	2	29	85.3	13	38.23
1926–33 „	32	2	27	84.37	11	34.37
		3	19	59.37		
1926–32 „	31	2	26	83.87	10	32.25
		3	18	58		
		4	14	45		
1926–31 „	30	2	26	86.6	10	33.33
		3	18	60		
		4	14	46.6		
		5	12	40		

CONTRALATERAL ARTIFICIAL PNEUMOTHORAX (A FREAK)

Artificial pneumothorax on healthy side with a view to controlling the diseased side.

—I am, etc.,

PETER W. EDWARDS.

Cheshire Joint Sanatorium,
Market Drayton,
Aug. 30.

Ambulatory Artificial Pneumothorax

SIR,—We read with great interest the excellent article by Dr. James Crocket on artificial pneumothorax treatment in the *Journal* of August 7 (p. 261). We propose to comply with the implied invitation in the section on ambulatory artificial pneumothorax, and regret we have not been able to do so earlier.

During the past five years we have found it necessary to induce ambulatory artificial pneumothorax in thirty-six cases. In the majority of these the induction was carried out at the dispensary and a few in the patients' homes. The patients were conveyed by car or ambulance and screened before and after induction. They rested on a couch for two or three hours, as it was felt that any complication due to the induction would have manifested itself during this period. Nineteen of these patients were subsequently admitted to hospital after an average waiting period of three months. It is our opinion that the time of institutional treatment was definitely shortened by the artificial pneumothorax, and in the majority of these cases there is every probability that, had the treatment not been started at the dispensary, the disease would have progressed so that unilateral artificial pneumothorax might have been impossible. The remaining patients were treated entirely at the dispensary, and among these have been some of our most successful cases. One, a male aged 24, has gained over three stones in weight during his year's treatment, and radiologically there is marked clearing of the disease.

It will be a matter of interest to Dr. Crocket to know that we have also induced five cases of simultaneous bilateral artificial pneumothorax. One, we hope, is proceeding to ultimate cure. Having lost a stone the patient regained it after the second induction, and *x*-ray examination now shows little evidence of active disease. Two other patients, females aged 19 and 20, are doing very satisfactorily both clinically and radiologically, and in spite of their age group we are very optimistic regarding the prognosis; one of these cases was complicated by bilateral effusion. For differing reasons none of these three cases has received hospital treatment since the second induction. The other two patients died. One was a girl of 15, who, however, gained one stone after the second induction. The other, a young woman, suffered an extension of the disease to the opposite side following the birth of a child; she also made some initial progress following the second induction and gained 3 lb.

Full notes, films, and diagrams of screenings of all the cases are available, and we hope after the lapse of the necessary time to publish our results.—We are, etc.,

R. MELVILLE HILEY,
E. A. ASLETT,
The King Edward VII Welsh National Memorial Association.

Aug. 28.

Chronic Disseminated Tuberculosis

SIR,—The book by Clifford Hoyle and Michael Vasey reviewed in the *Journal* of August 28 (p. 421), the paper by R. H. Fish in the *Archives of Diseases in Childhood* (1937, **12**, 1), and the invitation to Professor L. Sayé to read a paper on the subject before the Tuberculosis Association in April, 1936, are clear indications that chronic miliary tuberculosis is to be recognized in this country as an important clinical and pathological entity. It should be added, however, that chronic miliary tuberculosis is a somewhat protean condition, which justifies the substitu-

tion of the name "chronic disseminated tuberculosis" for "chronic miliary tuberculosis." It may appear as, or develop into, less recognized but not less important forms, which I demonstrated on the occasion of the visit of the Tuberculosis Association to the Papworth Village Settlement in March, 1934.

Chronic miliary tuberculosis may be "discrete"—that is, confined to the cortico-pleural, apical, or interlobar parts of the lung; it may produce miliary emphysema due to fibrosis of the nodules with subsequent distortion of the alveoli and small bronchi; or it may be associated with caseous pleurisy. The miliary nodules may be entirely fibrotic and form radiating scars, or they may be caseous, become confluent, and form infiltrations. These, after liquefaction, show the characteristic picture of "punched-out" cavities, sharply contrasting, because of their thin wall, with the cavities found in phthisis generally.

Chronic disseminated tuberculosis in its various forms is a chronic pulmonary lesion, haemic in origin, and associated with extrapulmonary manifestations, not seldom clinically latent; it is distinctly different from bronchogenic tuberculosis confined to the lungs. In the blood, serum substances retarding the growth of tubercle bacilli *in vitro* are often found in patients showing the haemic lesion, but are absent in those suffering from chronic isolated pulmonary phthisis. It should be remembered, however, that I was able at Papworth to produce in immunized animals the early forms leading to the isolated bronchogenic lesion by a haemic infection, which produced in a normal animal acute miliary generalization.

One point may be finally mentioned in connexion with the diagnosis of chronic miliary tuberculosis. In patients showing a chronic miliary spread it is often impossible to find evidence of tuberculosis, even on the post-mortem table. In such cases—without occupational history—I have several times found anthraco-silicotic changes near the hilum, and I regarded the miliary spread as silicotic rather than tuberculous in origin since, by experimental injection of silica, miliary nodules can be obtained identical with those mentioned. These doubts in the diagnosis of chronic miliary tuberculosis hold good in some cases recently described in the literature.—I am, etc.,

Papworth Village Settlement, Sept. 3. WALTER PAGEL.

Physical Disorder in Mental Hospitals

SIR,—The very interesting and suggestive paper entitled "Physical Disorder in 164 Consecutive Admissions to a Mental Hospital" by Dr. Robert Phillips in your issue of August 21 (p. 363) merits more than passing notice. It stirs an interesting memory of the time, many years ago, when I was in charge of the "mental" wards in the Edinburgh Royal Infirmary for nine years, during which period some fifty patients were annually certified and sent to Morningside Asylum. The fullest possible advantage was taken of the regulations of the hospital by which patients could be retained in the ward for two months' observation and treatment. Inspired by the valuable pioneer work on the blood by Dr. Lewis Bruce on the relation of physical disorder to mental disease, I directed my attention mainly to the presence of nutritional disturbances so far as these might be revealed by the examination of the urine, stools, and radiological examination of the *primae viae*. This investigation involved, *inter alia*, the careful examination of the urine for bacteria, presence of cells, etc., and of the state of the stools, notably the degree and persistence of foul odour, and general character of the flora on microscopical examination of stained films. The general conclusion drawn from lengthy observation and treatment based on its results was that a definite physical disorder was very much more common than was recognized, and that treatment of the physical condition was frequently remarkably successful in correcting the mental derangement. A record of the results was, at the instance of my friend the late Professor G. M. Robertson, the president of the Royal Medical Psychological Association, submitted at one of the annual meetings of the association in Edinburgh. At that time it was unreasonable, from the unusual nature of the lines of inquiry recommended, to expect a great deal of informed criticism. Many years' subsequent experience has not led to any material change in my opinion.

If my experience does not lead me to accept wholly Dr. Phillips's conclusions, the divergence of opinion may, I think, be explained by two points—one a question of "nomenclature," the other a varying interpretation of the word "necessity." In regard to the first, Dr. Phillips tells us that his series of cases included only five patients suffering from "alimentary *diseases*"—cancer, visceroptosis, and anorexia nervosa—and two patients suffering from "urinary *disease*"—renal calculus and cancer of the bladder. (The italics are mine.) I venture to assert that in any large series of mental cases the proportion of patients affected with notable *disorder* in these two systems is enormously greater than is recorded in his interesting series, and, further, that no sound conclusion as to causal connexion can be drawn until the physical disorder is corrected and the mental condition remains unchanged.

Regarding the second point, the limits of Dr. Phillips's paper did not allow for his presentation of data on points which are, in my view, essential in determining the correctness of the conclusion I drew from my own observations. And his statement that "the diagnoses of the cases reviewed have, when necessary, been confirmed by the consulting staff of the hospital, by laboratory methods, by *x*-ray examination, by operation, and in a few by necropsy" leaves the position unsatisfactory. Much obviously depends on the different views prevailing as to necessity.

A specially interesting point in Dr. Phillips's record is his description of fourteen cases classified as an acetonuric group. "A careful survey showed that all were in a debilitated state, with varying degrees of cachexia, exhaustion, cyanosis, furred and dried tongues, and foul stools." In relation to this, is it not a little doubtful whether Dr. Phillips is sound in his conclusion, which I assume he draws, when he states that while the general symptoms resulting in the ketosis were similar, the psychosis producing the symptoms varied, as illustrated by the names of *ten different psychoses*? (The italics are mine.)

Dr. Phillips's contribution is a noteworthy one. All will agree with his conclusions that "in a case presenting any abnormality the first essential is a thorough physical examination," and "the value of a well-equipped laboratory dealing with the problems of bacteriology, pathology, and biochemistry is emphasized." While not unmindful of newer teaching and practice, it is of value to emphasize equally the need for a wider outlook on the problem of nutrition of the mind and body alike, to cultivate the greater use of the unaided senses in diagnosis, and to remember the teaching of the ancients as revealed by the term "melancholia" for the large group of mental disorders in which a depressed state of mind is the leading feature.—I am, etc.,

Drem, N.B., Aug. 29. CHALMERS WATSON, M.D.

Insects and Disease

SIR,—In your issue of August 28 (p. 434) Dr. C. H. Foley contradicts my statement that the fever which afflicted Cromwell's army in Ireland was typhus, and asserts that the epidemic in question was plague. He mentions the outbreak of plague in Galway some weeks before Cromwell's arrival in Ireland, and the later involvement of Dublin. With these events I am familiar, like everyone else who has made any study of the history of epidemic diseases in Ireland. Had Dr. Foley been present at the lecture he would have realized that I concerned myself only with the main force commanded by Cromwell in person, which never approached Galway.

In the past no army subjected to the privations of a protracted campaign in Europe could hope to escape those twin plagues of war—dysentery and typhus—least of all in Ireland, where both diseases were normally endemic. The Lord Protector's army was no exception to this general rule. Boate, who was Cromwell's "Doctor of Physick to the State in Ireland," and who died there four months before Cromwell's return to England, says that two epidemic diseases were "very common". . . "in the English armies which since this bloody rebellion went over into Ireland"—namely, "the looseness" (dysentery) and "the malignant feaver"—under which usual name for typhus Boate gives a recognizable description of the infection. These two maladies he designates "reigning diseases" of Ireland. He tells us further, as we know from other sources, that because of its generality in Ireland the looseness is called by the English inhabitants "the country disease," and that the malignant fevers are "vulgarly in Ireland called Irish agues, because that at all times they are so common in Ireland, as well among the inhabitants and the natives, as among those who are newly come thither from other countries." Boate says nothing of plague in the Parliamentary forces. Indeed, he makes the general observation—based presumably on the fact that epidemic plague in Europe was in general a hot-weather disease—"The plague which so often and so cruelly infecteth England . . . is wonderfully rare in Ireland, and hardly seen once in an age." Nor does Cromwell himself refer to plague in his dispatches, and when commenting on his losses from disease he mentions only "the country disease" and "fever." Cromwell's lieutenant-general, Michael Jones, a fine soldier and a great man, died at this time of "contagious spotted fever." In justice to the distinguished historian whose error in confusing the Irish ague with malaria suggested my reference to Cromwell's army, I should point out that later in his account of the epidemic in question he names it correctly under one of its synonyms, and writes: "The weather was vile. The sickness among his troops was no longer malaria and dysentery but spotted fever, that plague which turned men's bones to water."

General and undefined mention of "plague" cannot be accepted as necessarily indicating bubonic plague, for the term was commonly used with even a wider application than our modern "epidemic." None the less, there seems to be no doubt that true plague was rife in several Irish towns after the Cromwellian occupation. But it is incredible that the generalized famine-pestilence which devastated the whole country could have been that disease. All the circumstances known to me of its incidence and distribution point to typhus. Unfortunately the contemporary accounts are scanty, but if the detailed descriptions of the later universal epidemics of famine-typhus in Ireland were condensed to the same compass they would give an identical picture. The medical history of Cromwell's army was repeated in the Williamite wars, thirty years later; but here, due chiefly to the industrious chaplain of Gower's regiment, we possess ample clinical details of the terrible ravages of dysentery and typhus—the latter in its most malignant form with gangrene of the extremities as a frequent complication—which reduced Schomberg's army to one-half of its initial strength.

Dr. Foley mentions the associated death of animals as excluding typhus. It is too late in the day, I suppose, to advise him to question survivors of the Irish famine-typhus of 1848 on the point. If this were possible, judging from my own experience in the past, he should have little difficulty in obtaining such accounts, the mortality in animals not being due to typhus but to the general circumstances of famine and pestilence. Nor does exalted rank confer any immunity from typhus, as witness the sad fate of the dignitaries of the High Court of Justice as late as the middle of the eighteenth century in England. Moreover, were not lice-infested senior officers one of the minor horrors of the Great War?

I suggest that Dr. Foley's "true facts," so far as Cromwell's own army is concerned, would amaze no one more than the Lord Protector.—I am, etc.,

London, Aug. 28. W. P. MACARTHUR.

The Vocal Cords in Singers and Speakers

SIR,—Mr. Victor Lambert, in his contribution to the discussion on the natural singing voice in your issue of August 28 (p. 432), seems to me to be on sound biological ground when he suggests that the difference between singers and non-singers lies in the brain and not in the larynx.

Having spent twenty-five years in contact with the natives of certain of the countries mentioned by Sir Milsom Rees, may I submit one or two observations that seem to me relevant. Writing of his experience of primitive African singing, Sir Milsom comments on its crudity and ugliness. But whatever its defects, it is admirably adapted to local requirements. To begin with, native custom and psychology offer little encouragement to singing for singing's sake, although the native can be genuinely appreciative of technical skill with either harp, drum, or flute. What is really important is power, and a European can but marvel at the carrying power of the voice in such tribes as the hillmen of Western Uganda. Group-singing among primitive natives means usually one of two things: either an arduous communal job of work or a "binge" with its attendant distractions, generally by the light of the glamorous African moon.

Before the native can grasp what singing means to us Europeans his outlook will have to change quite a lot. Missionaries have for years been teaching the African to sing. Wherever there is a school or a church—and they are everywhere nowadays—you may hear any and every day boys and girls of all ages and men and women making recognizable attempts at European tunes—that is, striving valiantly to imitate, solely by ear, sounds entirely foreign to their normal experience. The tribes along the shores of Lake Victoria do a great deal of singing in the course of their daily routine. Some of their songs are pleasing even to an ear untuned to the restricted range of primitive native music. Canoes frequently have to make long journeys across wide stretches of open lake. Singing helps the paddlers to swing together and to keep going. Without a song the men soon slack off and start talking. Certain individuals are recognized as experts. There may

be several in one crew to share the singing. The soloist shouts a line at the top of his voice and register, and then the crew grunt or yell a monosyllabic chorus, and so on for an hour or more at a stretch.

As to the rôle of the tom-tom in native singing, drums, besides adding to the noise, supply rhythm to regulate both the singer and his audience, be the responses vocal, hand-clapping, dancing, or all three. The travelling professional singer in Uganda—a true minstrel—always accompanies his song on either a small harp or a single-stringed violin. The main appeal of his performance appears to lie in the words, which are often appallingly obscene.

Singing for music's sake, the appreciation of a "good note"—or the production of one for that matter—do not, as far as I know, exist among primitive Africans. Nevertheless, the power to sing, as we Europeans sing, is there, latent in the native larynx. A visit to Namirembe Cathedral in Uganda or to the Trappist establishment at Pine Woods, near Durban, will satisfy the most exacting sceptic. Both these places possess native choirs capable of a finished rendering of the higher forms of choral music. Both will well repay a visit.

Mr. Lambert remarks, "The essence of the problem is whether there is a faculty lying dormant which can readily develop under the influence of a suitable environment." The East African evidence goes, I think, to show that there is. It is the organist, and not the organ, that is at fault.—I am, etc.,

Sussex, Aug. 31. H. LYNDHURST DUKE.

Unusual Cases of Cerebral Haemorrhage

SIR,—The following two cases of fatal cerebral haemorrhage, which occurred in my practice within twenty-four hours, may be of interest to readers of the *Journal* as the circumstances attending both cases were unusual.

CASE I

On August 22, 1937, a widow aged 69 was being driven by her grandson, aged 18, in the front passenger seat of his car from Bournemouth to Winchester, a distance of forty-one and a half miles. About five miles on the south side of the latter town the driver found himself in a long queue of cars all travelling at about fifteen miles an hour. A car towards the head of the queue braked violently, and those following did so in succession. That in which my patient was travelling succeeded in pulling up two feet behind the car in front, but an Austin Seven behind failed to stop in time and hit the back of the car in front of it with considerable force. The widow was thrown forward in her seat and then backwards, and her hat was jerked off on to the floor. She complained of nothing at the time except a pain in her right shoulder; this was inspected by a friend. All the occupants of both cars alighted, inspected the damage to the cars, exchanged names and addresses, and proceeded to Winchester.

Here my patient did a tour of the cathedral, where she complained of a headache. In the meantime the driver reported the accident to the police, who stated that as no one was apparently injured the report to the police had been unnecessary. The party remained about an hour in Winchester and then returned to Bournemouth, stopping on the wayside for a picnic tea, at which the widow took an aspirin tablet and a cup of tea and a sandwich. She arrived home about three hours after the accident, still complaining of nothing but the right shoulder.

Four and a half hours after the accident the patient vomited violently; an hour after this she vomited again, and half an hour later she became unconscious. She remained unconscious for an hour and a half before her relations realized the seriousness of her condition. When I arrived at 10.30 p.m. the patient was breathing stertorously, with extreme cyanosis. The left pupil was pin-point and the right almost so. The head, neck, arms, and upper half of the trunk were sweating profusely, while the lower half of the trunk and the legs and feet were cold. The pupils did not react to light; the knee-jerks were present and the plantar reflexes were flexor. There was incontinence of urine. I helped to remove her on a stretcher to a nursing home almost opposite her own house at midnight, where she died at 2.30 a.m.

The post-mortem examination revealed a heart weighing 14½ ounces (the normal female heart weighs from 10 to 12 ounces). There was advanced arteriosclerosis and marked atheroma of the coronary arteries. The vault of the skull was abnormally thick and heavy, and there was a linear fracture of the sphenoid bone extending from its left outer edge right across the base to the sella turcica. The whole of the surfaces of the left cerebrum and cerebellum were completely covered by blood clot.

No evidence was adduced at the inquest of the deceased having been seen to strike her head, and this point was gone into very thoroughly by the coroner; the patient herself did not complain of a blow on the head, but only of one on the shoulder. In view of the presumed absence of a direct blow on the head I put forward the suggestion, for what it is worth, that a normally thin sphenoid bone might possibly be fractured by a sudden violent jerk of the body when the base of the skull has to carry an abnormal weight of vault bone in a frail woman of 69. I made this suggestion to the coroner, and added that I thought it improbable. The jury brought in a verdict of accidental death and exonerated both drivers from blame.

The extraordinary features of this case to my mind are that the patient could have received such an extensive fracture of the base with such profuse haemorrhage into the vault with no history of a blow on the head; that she could have been driven forty-six and a half miles in a car and walked about for an hour with no complaint of head symptoms, except a headache, which does not seem to have inconvenienced her unduly; and that six hours elapsed before unconsciousness supervened.

CASE II

A garage fitter, aged 35, after helping to lift a heavy motor-coach engine, complained to the manager of "something having given way in his neck." As he seemed ill the manager sent him to the hospital, which is about seven minutes from the garage, in a car. Here he was examined, and nothing unusual was found. He complained to the house-surgeon that all he felt was a slightly stiff neck. He remained at the hospital for a short time and then returned to the garage, where he began work again. Ten minutes after his return he collapsed, and was again put in a car and brought to my house. I was called out to the gate to see him as he was too ill to move. I found him huddled up on the floor of the car with his head on the back seat, very cyanosed, with bounding and rapid pulse, and his breath coming in spasmodic gasps. I advised quick removal to hospital, but he died in the car on the way there. At the post-mortem examination the pathologist found one of several small aneurysms of the circle of Willis which was ruptured.

I also saw a third case of cerebral haemorrhage in the same week in which there were four or five fissured fractures in the central part of the frontal bone just above the frontal sinus. There was considerable haemorrhage into both eye sockets. This patient recovered.

These cases go to prove, I think, that one does not always find the classical signs of a fractured base—namely, haemorrhage from the ears, eyes, nose, or mouth—which one was taught as a student to look for; while in the third case one of these classical signs appeared in the case of a fractured vault.—I am, etc.,

A. E. COLLIE, M.A., L.M.S.S.A.

Bournemouth, Aug. 29.

Tennis Elbow

SIR,—Glad though I am to find Mr. G. K. McKee (*Journal*, August 28, p. 434) and myself in such complete agreement on the pathology of tennis elbow, I think the time is not ripe for changing its name to "traumatic periostitis at the origin of the extensor carpi radialis brevis." At the discussion of this subject in the Section of Orthopaedics at Belfast only two of the nine members who are reported as having spoken were in favour of this conception. Even Mr. G. P. Mills, whose manipulation consists in putting a sudden great strain on the extensor origin at the epicondyle, is so unimpressed by the theory of his very successful method of treatment that he attributes tennis elbow to an affection of the coronary ligament. Until, therefore, the majority of the profession have been converted to the idea of a traumatic periostitis by the, to my mind, conclusive arguments put forward by Mr. McKee in his letter and by myself in the article he refers to, it is premature to label tennis elbow with a name that precludes a difference of opinion on the pathology. For the present it would seem that the non-committal historical term will have to be retained.

In 1873 Runge described, but did not name, a case of inability to write associated with tenderness on the lateral humeral condyle. Morris, in 1882, noted a condition analogous to rider's sprain, which he called "lawn tennis arm." An annotation in the *Lancet* in 1885 drew attention to the number of sufferers from "tennis elbow," whose plaintive letters had recently appeared in the lay press. Remak (1894) and Bernhardt (1896) agreed with Runge that it was a periosteal tear due to occupational over-use of the extensor muscles of the forearm. Couderc (1896) called it a ruptured epicondylar tendon, Féré (1897) épicondylalgie, and Franke (1910) epicondylitis. Osgood (1922) suggested radio-humeral bursitis, thereby incriminating the bursa discovered by Monro in 1788. Schmidt (1921), on the other hand, believed the fault to lie in the subcutaneous epicondylar bursa, first described by Schreger in 1825. On the whole the more recent English writers have called it tennis elbow, while Continental writers have preferred epicondylitis, but all are agreed that tennis is by no means the only cause of the condition, and that the bony epicondyle is seldom, if ever, inflamed. However, until agreement becomes general the name "tennis elbow" will have to remain, since it does not imply the acceptance of any particular theory on the pathology. But I hope that this agreement will not be long delayed, so that Mr. McKee's excellent suggestion may become universally acceptable.—I am, etc.,

London, W.1, Sept. 1. J. H. CYRIAX.

A Case of Ether Convulsions

SIR,—Recent interest in this condition has prompted us to submit an account of a typical case which occurred while under our care.

The patient is a well-built boy, aged 16, who was admitted to hospital twenty-four hours after the onset of an attack of acute appendicitis. He was obviously toxic, with a temperature of 101° and a pulse rate of 90. Since operation his family history has been carefully investigated, and there is no hereditary disturbance or epileptic tendency.

The operation was performed on a very hot and thundery summer afternoon. Induction was started at 4 p.m., three-quarters of an hour after the hypodermic injection of omnopon 1/6 grain and scopolamine 1/300 grain, with an ether chloroform mixture in the proportion of three to one. Induction was smooth and lasted ten minutes. It is interesting to note, first, that no atropine was given, and, secondly, that the ether had been in the drop-bottle since an emergency operation the previous night and so had presumably been exposed to more actinic light than usual, especially as the bottle was not amber-coloured. The operation had lasted half an hour when the anaesthesia was deepened preparatory to sewing the peritoneum. Throughout this time the patient had been breathing well and was a good colour, nothing abnormal being noted except that he was sweating profusely, which was in some measure due to the temperature of the day.

The first sign was a stiffening of the jaw, followed by twitching of the eyelids, which spread to the limbs and gave way to clonic movements of the whole body. The breathing, colour, and pulse were still good. The patient was then deeply anaesthetized with chloroform, and evipan was prepared but not used; it would have been quite impossible to give an intravenous injection in the presence of such violent convulsions. The convulsions became much less violent as soon as the chloroform was given, but were as frequent. The operation was hastily completed, and as the skin was being stitched the patient went into tonic spasm, including spasm of the larynx, becoming very cyanosed, with a marked change in the pulse, which became thin, thready, and rapid. Oxygen was administered and the spasm slowly passed off, the pulse improved, and the convulsions ceased. Convalescence was uneventful, although the temperature was raised for the first few days.

We have been able to trace thirty-two references to this condition in the literature, all published since 1927. Most writers are agreed that the condition carries a mortality of at least 50 per cent., and tends to occur in hot weather in young people who are suffering from an acute illness—often appendicitis. Many suggestions have been put forward to account for the condition, none of which are entirely satisfactory. Wilson, who originally described the condition, decided after exhaustive inquiries that it was due to impurities in the ether–acetaldehyde and "peroxides," which develop if the ether is exposed for any length of time to the action of light, especially actinic. Our case would appear to support this. Other suggestions have been that there is some personal or familial idiosyncrasy, or that the condition is due to the administration of atropine, the dose having been repeated in some cases following an unforeseen delay in starting the operation. In the case we have described no atropine was given at all.

Finally, it is interesting to note that the condition of the patient improved as soon as chloroform was administered. This is contrary to the general consensus of opinion, which advises the intravenous injection of evipan. Such an injection would have been technically impossible in the circumstances. There was no tendency to relapse or to cardiac failure after the cessation of the convulsions, as has been recorded after the use of evipan, following which death has been reported several hours after an apparent recovery.

We wish to record our thanks to Mr. E. S. Lee for his kind permission to publish this case.—We are, etc.,

D. N. MATTHEWS.
London, W.1, Aug. 29. EDWARD GEAL.

Anti-spasmodic Drugs in Labour

SIR,—The reference in the *Journal* of July 10 (p. 58) to an article by Drenkhahn in *Med. Welt* of March 20, 1937 (p. 394), states that the author arrives at his conclusions "on purely theoretical grounds." In his original paper Drenkhahn draws certain theoretical deductions, which, however, he bases upon the pharmacological experiments of C. v. Schindler and on the clinical observations of L. Alexander. The fact that atropine causes a relaxation

of the sphincter of the portio vaginalis of the uterus, while it has no or only a slight stimulating effect on the muscles of the body of the uterus, was already well known to a number of authors, who have proved this statement in several hundred clinical cases and have contributed a certain amount of work on the subject of the pharmacological action of the drug in obstetrics.

May I record the experiences I have had in more than forty obstetrical cases, using syntropan (Roche) instead of atropine. Syntropan is a synthetic ester of tropic acid, whereas atropine is a tropic ester of tropine. Syntropan has only a very slight action on the heart, circulation, secretory glands, pupil, and accommodation. It was therefore found to be harmless and well tolerated, no undesirable after- or by-effects (palpitation, rashes, sight trouble, dryness of the mouth) being observed.

The procedure in every case was to administer syntropan rectally when the pains came on regularly, and at intervals of not more than ten to twelve minutes. After one to one and a half hours another suppository of syntropan was introduced. The effect became apparent after about fifteen minutes, when the pain was alleviated, while the force of the uterus contractions in no way decreased. The patients soon felt much more comfortable. The dilatation of the cervix was hastened and no narcotics were used except, of course, a little ether at the end of the second stage. The first stage was shortened by two to four hours, as has also been recorded by several other authors, and the time of the confinement very much reduced. The patients in most cases were normal anatomically, but they included a preponderance of elderly primiparae, and in quite a number the foetal head was slightly overlapping. In no case was there a secondary uterine inertia, and, thanks to the relaxation of the painful spasms, the women developed sufficient reserve power and steadiness, so that the ultimate result was satisfactory for both mother and child without the necessity of operative intervention.

I made the same observations as Alexander, Kreis, Gammstadter, and several French authors, and I wish to confirm the conclusions of Drenkhahn—namely, that the employment of spasmolytics in obstetrics is useful, and that atropine has certainly a good influence in labour, even in normal cases. (Syntropan, having a similar action on the uterus, but being devoid of by-effects, is better tolerated and more to be recommended.) Syntropan brings about a marked relaxation of the sphincter of the cervix uteri and helps to increase the polarity of the womb. Atropine and syntropan are both parasympathetic depressants. "The uterus receives both motor and inhibitory fibres from the sympathetic. There is no supply by the sacral autonomic (Wright)."

The question as to how the polarity of the womb and the action of atropine and syntropan on the cervix and uterus body is brought about still remains open.—I am, etc.,

London, N.W.6, Aug. 24. F. E. HIRSCH.

N. J. Rousset (*J. Méd. Lyon,* May 23, 1937, p. 283) draws attention to the dangers of manicure. The main risk is an infection of the perionychial tissues caused by repeated slight injuries to the cuticle while it is being pushed back. These result in a staphylococcal infection of the nail matrix and of the surrounding tissues. The author distinguishes three forms of infection: (1) a purely inflammatory form, (2) a suppurating form, and (3) a mixed form. The nail itself is usually not affected, but in some cases transverse grooves may appear, and may be so deep as to cause complete separation between the different parts of the nail. The grooves then fill with a fleshy granulation not unlike botryomycoma. The differential diagnosis is usually easy, but certain forms of syphilitic, eczematous, inflammatory, and chemical dactylitis may closely simulate the affection described.

Obituary

GEORGE EDWARD LOVEDAY, M.A., M.B.

Director of the Clinical Laboratory, Royal Infirmary, Manchester; Reader in Clinical Pathology, Manchester University

We announce with regret the death of Dr. G. E. Loveday, which took place in tragic circumstances at Sheringham. He had apparently been in poor health for some months, although he had said nothing about it to his colleagues.

George Edward Loveday was born in 1876, and was educated at Giggleswick and Caius College, Cambridge, where he took his B.A. in 1898 and spent an extra year studying pathology in its general and clinical aspects. He completed his medical course at St. Bartholomew's Hospital, and qualified M.R.C.S., L.R.C.P. in 1902; in 1903 he proceeded to the M.B. and M.A. of Cambridge University. Hospital appointments followed at Addenbrooke's and the Salop Infirmary, and in 1905 he joined the staff of Sir Almroth Wright's laboratory at St. Mary's Hospital, London. Here he studied opsonins and therapeutic inoculation, and in 1906 was appointed to give instruction in Wright's methods for three months at the Manchester Royal Infirmary. Some time previously Loveday's sister had married Sir Arthur Schuster, the professor of physics at Manchester University, and it was probably this connexion which attracted him to the city in which he was destined to spend the rest of his life. Loveday's work so greatly impressed all with whom he came into contact that he was appointed director of the clinical laboratory within a year of his arrival, a position he still held with great distinction at the time of his death. It was an ideal post, for it gave him plenty of time and facilities for outside consultant work, and his services were freely used. At the time of his appointment the laboratory staff consisted of himself and a boy, but under his directorship it gradually grew to its present personnel of sixteen, and he became responsible for the administrative charge of a vast amount of work covering the whole scope of clinical and pathological practice of a large teaching hospital. In addition he held the readership in clinical pathology at the University, and taught clinical pathological methods to generations of students. His laboratories, too, had to be extended, and the designs and plans were largely his.

Throughout his life Loveday remained a devoted disciple of Wright and Wright's methods. His main interests were in the serological and bacteriological side of clinical pathology, but he was not greatly interested in biochemistry. He was expert in vaccine therapy, and devoted a large amount of his time to this particular study. He excelled in the application of serological and vaccine therapy as applied to each particular case, and as his clinical judgement and balance were good his opinion in cases of infection was extremely valuable. Loveday was a great believer in small doses, and his experience convinced him that the population of Manchester as a whole could not stand the doses usually recommended and employed in London. Careful records of the dates, dosage, and effects produced were kept, and these lay in neat piles around him on his desk. Woe betide anyone who disarranged them! The cares of a very busy practice unfortunately prevented the publication of much valuable statistical material. His work was characterized by its accuracy, neatness, and thoroughness. It was personal and painstaking to the last degree, and he never delegated important work to others. His technical skill was extraordinary, and nowhere was it

more evident than in the neatness of his blood transfusion work. He was something of a martinet, and would brook no interference in his laboratory from anybody. Freely consulted by everyone on the hospital staff, he liked nothing better than to discuss a slide or the treatment of a case with one of his colleagues, but should the latter betray the least ignorance on a pathological matter the scorn in Loveday's voice was unmistakable. It would quickly pass, however, and the visitor would leave the laboratory with much valuable information.

Loveday was a man of rare character and was respected by all, especially by the numerous people who learned their clinical pathology by working in his department and were able to recognize the charm of a character that was not always apparent on casual acquaintance. On the outbreak of the war he was appointed pathologist to the 57th General Hospital, at first in Manchester, but later, in 1917, in France. It was on the journey over that he first met the lady who became his wife. He had three children, who were unfortunately all delicate. In May this year his eldest son went as a King's Scout to the Coronation. Almost at once on his return to school he developed meningitis and died. It was a terrible blow to Loveday, and must have been the beginning of the end.

Professor Albert Ramsbottom writes: Dr. Loveday's tragic death has left a gap in our medical school which it will be difficult to fill, and has deprived many of us of a very staunch friend. The position he held at the Manchester Royal Infirmary was, I think, unique, so varied were his duties, and upon every branch he brought to bear a master mind. It is difficult to imagine a more efficient director of a clinical laboratory, for he combined a mastership of technique with an astonishing capacity for work, which he was ever ready to place at your disposal; his aid was eagerly sought by all who realized the value of his help in solving clinical problems. He had a shy and retiring temperament, which was apt to be mistaken for unfriendliness, but closer contact soon revealed his true kindly nature. In his early years in Manchester I am sure that his health was maintained by occasional fishing and skating holidays, to both of which pastimes he was devoted. The ever-increasing demands, however, of medicine upon the ancillary services made a greater call on his time, and, despite repeated warnings from his friends, led him gradually to restrict his leisure; as time passed it was noticeable to his colleagues that the ever-increasing strain of work was taking its toll of a constitution at no time robust. Coupled with this came the tragedy in May of the death of his elder son—a blow which plunged him into a grief from which he never recovered and ultimately led to his breakdown in health. He leaves a widow, a son, and a daughter, to whom our whole-hearted sympathy goes out.

CHARLES CARTER BRAINE, F.R.C.S.

We regret to announce that Mr. Charles Carter Braine, the distinguished anaesthetist, died on September 1, aged 78, at Grove End Gardens, N.W. He had been in ill-health for the past year or two, and had recently undergone an operation. He was educated at Charing Cross Hospital, taking the M.R.C.S., L.R.C.P. in 1887, and the F.R.C.S.Eng. in 1890. He filled for many years the position of anaesthetist at Charing Cross Hospital, and also at the Royal Dental and St. Peter's Hospital for Stone, following in all these appointments his well-known stepfather, F. Woodhouse Braine, F.R.C.S. He was during the great war anaesthetist to the King George Hospital, London.

Carter Braine's contributions to literature included "Artificial Respiration and Resuscitation," *Quain's Dictionary of Medicine*, third edition; "A Safety Junker Inhaler," *British Medical Journal*, 1892; "Position in Kidney Operations," ibid., 1900; "Experience of Anaesthetics in 200 Consecutive Cases of Prostatectomy," *Trans. Soc. Anaes.*, 1906. He was joint author with Arthur Underwood of *Notes on Anaesthetics in Dental Surgery*, second edition.

He was a man of great experience, and could be relied upon to deal with any emergency, imperturbability being his chief characteristic. Carter was a modest man and an agreeable colleague, and it was a lasting pleasure to call him "friend" and to know him intimately as "Chas." As an instance of his generous nature it may be mentioned that, hearing that the son of the writer of this note had suffered from whooping-cough, Carter insisted upon giving up his house at Bognor for the boy's benefit. He devoted much of his time to Freemasonry, and held many of the highest ranks in the craft—Grand Officer, Harvey Chapter, and member of La Chère Reine, Cavendish, and other lodges. Mrs. Carter Braine for more than forty years was a most devoted helpmate. She and the family of two sons survive. The elder, John Francis Carter Braine, M.D., F.R.C.S., is assistant surgeon to the actinotherapeutic department of Guy's Hospital.

DAVID CONNOR KIRKHOPE, M.D., D.P.H.,

Formerly Medical Officer of Health for Tottenham

The death occurred at a London nursing home on August 25 of Dr. D. C. Kirkhope, who, at the age of 65, had only recently retired from the post of medical officer of health for the borough of Tottenham.

Dr. Kirkhope received his early medical training at Queen's College, Belfast, and Glasgow University, and qualified M.B., Ch.M.Glas. in 1895, proceeding to the M.D. degree in 1906. After obtaining the D.P.H.Cambridge he was called to the Bar of Gray's Inn and the Middle Temple. In 1909 he was appointed assistant medical officer of health for the borough of Leyton, and in 1913 succeeded the late Dr. Butler-Hogan as medical officer of health for Tottenham, which position he held with marked distinction for twenty-four years until his retirement in May of this year.

During more than a quarter of a century of public health service Dr. Kirkhope took an active part in the growth of preventive medicine not only in Tottenham itself but in the service as a whole. As a member of the British Medical Association for more than twenty-five years Dr. Kirkhope was chairman of the North Middlesex Division in 1927–8, honorary secretary to the Section of Preventive Medicine at the Annual Meeting of the Association at Cardiff in 1928, and acted as representative in the Representative Body on seven occasions between 1925 and 1932. Dr. Kirkhope was a man of high principle and zeal, and at his retirement his long record of work in Tottenham brought forward from members of the town council and representative bodies and from colleagues many expressions of appreciation indicating his undoubted popularity and the esteem and respect in which he was held. He was looking forward to a world tour in September, during which he had hoped to visit two of his sons in Canada, and this must be an added grief to his surviving widow, two daughters, and three sons.

A colleague writes: The position of medical officer of health for a large borough such as Tottenham is a responsible one and needs moral courage and administrative ability in the man who occupies it. Dr. Kirkhope

possessed both these qualities. During his long term of office there was great development in the social services of the borough. The public health department, when his term of office expired in April last, embraced clinics for minor ailments and for the eye, ear, teeth, orthopaedics, and anti-diphtheria inoculation. The maternity and child welfare work was very well organized, extensive, and successful. Dr. Kirkhope was keen on his work and a friend to the members of his staff, medical and clerical. Because he was capable and straight he won their confidence and inspired their loyalty. He could make a good speech, and he wrote clear and good English, as can be seen from his annual reports. He was also a skilled musician. He will be missed especially by the older members of the community. Those of us who were regularly in touch with him will look back with gratitude to him for good advice, ready help, and friendliness.

MELVILLE MORTIMER ADAMS, M.B., B.S.,
Pretoria

The death on August 6 of Dr. M. M. Adams came as a great shock to his many friends. Dr. Adams was a Transvaaler by birth, being born in Lydenburg on November 26, 1884. He was at school in Pretoria, subsequently joining the King Edward Grammar School, Chelmsford, where he remained until he matriculated at London University. His medical studies were at Guy's Hospital, where he remained until he qualified with the English Conjoint diplomas M.R.C.S., L.R.C.P. In 1912, having taken the degrees of M.B., B.S.Lond., he returned to Pretoria and became house-surgeon to the Pretoria Hospital. At the outbreak of the great war he was with the South African Forces in South-West Africa. On the completion of that campaign in 1915 he returned to Pretoria for a short time, but in the same year he went to England and joined the R.A.M.C. as a lieutenant. He was sent to Gallipoli, and later was attached to Lovat's Scouts in Egypt. At the end of 1916 he was attached to the 2nd South African Infantry with the rank of captain. He was in France in June, 1918, and was present at the actions at Beaurevoir and Le Cateau. He was demobilized in Capetown in October, 1919, and returning to Pretoria went into general practice, which he continued to his death.

Dr. Adams was for many years on the honorary visiting staff of the Pretoria General Hospital and was honorary lecturer to the nurses there until his death. He was at one time president, and previously secretary, of the Pretoria Division of the S.A.M.A. (B.M.A.). He was a prominent Freemason and a Past Master of the Transvaal Lodge E.C. He was an enthusiastic golfer, and belonged to nearly all the golf clubs in Pretoria. His funeral was attended by a large contingent of the hospital nurses in uniform, by his colleagues of the visiting staff, and by representatives of all sections of the community.

H. P. V.

We announce with regret the death, at the age of 40, of Dr. William Melrose Cumming. Dr. Cumming took the M.B., Ch.B. at St. Andrews in 1922, and since his interests were even at that time in public health, and particularly in the treatment of tuberculosis, he went on to take the D.P.H. in 1925, the Ph.D. in 1926, and finally the M.D. with a gold medal in 1927. He was for a short time assistant to the Professor of Bacteriology at University College, Dundee, and later became assistant medical superintendent of the Fife and Kinross Joint Sanatorium. After that he was for a short time senior assistant medical officer to the Grove Park Hospital, Lee. He was appointed medical superintendent of the Grassington Sanatorium in May, 1926, and was succeeded by Dr. R. S. Donaldson in June, 1935. His publications included an article on the serology of the bovine type of tubercle bacillus, published in 1925, the results of some work done two years later on the pseudo-haemolytic streptococci isolated from the sputum in pulmonary tuberculosis, and more recently he contributed to a symposium on the infectivity of tuberculosis, which appeared in the *British Journal of Tuberculosis* in 1932.

The death of Dr. ANTOINE BÉCLÈRE robs France of one of her most gifted and versatile radiologists. As a young man he was already beginning to make his mark in bacteriology when Röntgen's discovery of the *x* rays induced him to throw all his energies into this field in which he played so distinguished a part that he became president of the Société de Radiologie de France. He was also at one time president of the French Academy of Medicine. Only a few years before his death Béclère took up with much enthusiasm the work of his younger days and published bacteriological studies, several of which were concerned with influenza.

The Services

DIRECTOR-GENERAL, A.M.S.

The War Office announces that Major-General W. P. MacArthur, D.S.O., O.B.E., M.D., D.Sc., F.R.C.P., F.R.C.P.I., Honorary Physician to the King, has been selected to succeed Lieutenant-General Sir James A. Hartigan, K.C.B., C.M.G., D.S.O., M.B., D.Ch., Honorary Physician to the King, as Director-General of Army Medical Services when the latter completes his tenure of office on March 1, 1938.

General MacArthur graduated in the Royal University of Ireland from Queen's College, Belfast, in 1908 and was commissioned in the R.A.M.C. in 1909. For his services in the great war he was awarded the D.S.O. in 1916 and the O.B.E. in 1919. Since then he has held the appointments of Professor of Tropical Medicine at the Royal Army Medical College, Consulting Physician to the Army, Deputy Director-General at the War Office, and Commandant and Director of Studies at the Royal Army Medical College, which appointment he now holds. He was appointed Honorary Physician to the King in 1930. He was elected Fellow of the Royal College of Physicians of Ireland in 1913 and of the London College this year. He is an honorary D.Sc. of Queen's University, Belfast. He was Thomas Vicary Lecturer before the Royal College of Surgeons of England in 1931, and Chadwick Medallist in 1935.

DEPUTY DIRECTOR-GENERAL, I.M.S.

Lieut.-Colonel E. G. Kennedy has been appointed Deputy Director-General, Indian Medical Service.

ARMY DENTAL SERVICES

The War Office announces that Colonel D. Clewer, Inspector of Army Dental Services in India, has been selected for appointment as Director, Army Dental Services, The War Office, in succession to the late Colonel J. V. M. Byrne.

DEATHS IN THE SERVICES

Colonel THOMAS EVELYN FIELDING, D.S.O., late R.A.M.C., died at Hindhead on August 9, aged 65. He was born on July 27, 1872, and educated at Trinity College, Dublin, where he graduated B.A., M.B., B.Ch., and B.A.O. in 1897. Entering the R.A.M.C. as lieutenant on April 25, 1900, he became lieutenant-colonel on December 26, 1917, and retired as colonel in 1930. He served in the South African War of 1900–2, when he took part in operations in the Transvaal, the Orange River Colony, and Cape Colony, served in the defence of Fort Itaka, on the Zululand border of Natal, in October, 1901, was mentioned in dispatches in the *London Gazette* of September 10, 1901, and January 17, 1902, and received the Queen's medal with three clasps and the King's medal with two clasps. In the war of 1914–18 he served as A.D.M.S. of the 28th

Division in the Salonika Force in the army of the Black Sea and in Constantinople, was mentioned in dispatches in the *London Gazette* of October 19, 1914, and June 25, 1915, and received the D.S.O.

Surgeon Captain WILLIAM BASTIAN, R.N. (retired), died in University College Hospital, after five weeks' illness, on August 2, aged 62. He was the third son of the late Dr. H. Charlton Bastian, F.R.S., and was educated at University College School, Hampstead, and at University College Hospital, and qualified M.R.C.S., L.R.C.P. in 1900. After qualifying he joined the Navy, became surgeon commander on August 2, 1914, and retired as surgeon captain on June 8, 1925. Captain Bastian was particularly interested in the problem of prevention of venereal disease in the Navy. He served during the war of 1914–18. He had been a member of the British Medical Association since 1907, and served on the Naval Medical Service Subcommittee in 1919–20. Since his retirement he had resided at Loughborough. He leaves a widow, one son, and two daughters.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Titles of medical degrees were conferred by diploma on the following members of Girton and Newnham Colleges during July:

M.B., B.CHIR.—M. B. Billington, G. M. S. Caldwell.
M.B.—E. M. Wright.

UNIVERSITY OF LONDON

A course of lectures and clinical instruction for medical practitioners on problems connected with retarded and difficult children has been arranged by the University Extension and Tutorial Classes Council, in co-operation with the Central Association for Mental Welfare, and will be held from Monday, November 1, to Saturday, November 6. The course is open to those medical practitioners who have already attended the course on mental deficiency and allied conditions, or who have specialized experience approved for the purpose of the course. The lectures will be delivered at the University of London, Senate House, Montague Place, W.C., unless otherwise stated on the students' time-tables, and will be given from 10 a.m. to 12.30 p.m. each day. Detailed time-tables will be sent by October 26 to each person proposing to attend the course, and in order that the practical work may be satisfactorily arranged it is important that forms of application should be filled in and returned not later than October 9. The University will grant certificates of attendance to those who attend regularly taking both theoretical and practical work. The registration fee is 10s. 6d. and the fee for the course £3 3s. All communications should be addressed to Miss Evelyn Fox, c/o University Extension Department, University of London, W.C.1.

SOCIETY OF APOTHECARIES OF LONDON

The following candidates have passed in the subjects indicated:

SURGERY.—J. B. Alexander, F. Bastawros, J. D. Buckner, I. W. Claiman, T. Gadian, J. B. Good, W. A. Groom, E. de C. Kite, B. W. S. Spurgin, A. T. Rogers, W. E. Young.
MEDICINE.—A. A. Beazeley, T. Gadian, O. D. Gilmore, H. W. John, K. G. Pascall, T. van der Walt.
FORENSIC MEDICINE.— A. A. Beazeley, T. Gadian, O. D. Gilmore, B. T. Jones, K. G. Pascall, T. van der Walt.
MIDWIFERY.—H. P. Anderson, A. Backman, J. A. W. Berryman, H. B. O. Cardew, D. H. Fowler, M. W. Hemans, D. C. Light, G. MacBain, T. van der Walt.

The diploma of the Society has been granted to A. A. Beazeley, I. W. Claiman, O. D. Gilmore, H. W. John, E. de C. Kite, K. G. Pascall, and T. van der Walt.

ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW

At a meeting of the Royal Faculty of Physicians and Surgeons of Glasgow, held on September 6, with Professor Archibald Young, the president, in the chair, the following were admitted Fellows of Faculty: Paresh Nath Baruah, M.B., Alfred Finlay Brown, M.B., Ch.B., Enrique Eduerdo Krapf, M.D., Edwin Stewart Lawrie, M.B., Ch.B.

Medical News

The eleventh Congress of the Société Internationale de Chirurgie will be held in Vienna from September 19 to September 22, 1938, under the presidency of Professor Rudolph Matas of New Orleans.

All qualified medical practitioners interested in plastic surgery are invited to attend the second European Congress of Structive (Plastic) Surgery, which is to be held at the Royal Society of Medicine, London, on October 6 and 7. The office of the congress is at 149, Harley Street, W.1, to which acceptances of the invitation, accompanied by the congress subscription of £1 and requests to join in the discussions, should be forwarded not later than September 25.

The first world congress on the human voice will be held during the Paris Exhibition from September 19 to 28 in the Health of Jena and the Marcelin Berthelot centre. The programme will consist of two parts—namely, the production, accomplishments, and education of the direct voice, and the microphone voice.

An International Congress of Anaesthetics will be held at Chicago from October 25 to 28, and will be followed by a supplementary congress at the University of Wisconsin. Further information can be obtained from the general secretary, Dr. D. F. McMechan, 318, Hotel Westlake, Rocky River, Ohio.

The annual dinner of the old students of the Medical College of St. Bartholomew's Hospital will be held on Friday, October 1, in the College Hall, Charterhouse Square, at 7.30 p.m., with Dr. C. M. Hinds Howell in the chair.

The annual dinner of the Middlesex Hospital Medical School will be held at the Savoy Hotel on Friday, October 1, at 7.30 p.m.

The annual prize distribution of St. George's Hospital Medical School will be held in the board room of the hospital on Saturday, October 2, at 3 p.m., when Dr. W. R. Halliday, principal of King's College, London, will deliver the inaugural address.

The William Gibson Research Scholarship for Medical Women of the Royal Society of Medicine has been awarded to Dr. Nancy E. G. Richardson of London. Dr. Richardson proposes to carry out research on carbohydrate metabolism in pregnant and lactating women in relation to the principles secreted by the anterior lobe of the pituitary.

The *Proceedings* of the Staff Meetings of the Mayo Clinic of July 28 contains an announcement that the residence of Dr. and Mrs. W. J. Mayo is to be converted into an establishment to assist the educational aims of the Mayo Foundation and of the University of Minnesota. The residence and the east half of the block on which it stands will be transferred by deed for the Foundation to a board of trustees, and Dr. Mayo intends to endow the property sufficiently to prevent taxes and general maintenance becoming a burden on the Foundation.

A serious outbreak of infantile paralysis in Melbourne (Australia) is reported in the *Times* of August 30. Up to August 29 the total number of cases was 185, with thirteen deaths, including four adults. Over 100 schools have been closed, and special education broadcasts have been arranged for children kept at home by their parents. Country areas are demanding that children arriving from Melbourne shall be isolated, and Tasmania is making a similar stipulation. A police force has been sent from Sydney to patrol the Victorian border to prevent the entry into New South Wales of children without medical certificates of twenty-one days' isolation.

The issue of the *Journal de Médecine de Lyon* for August 20 is devoted to diseases of the alimentary system, that of the *Journal de Médecine de Paris* of August 19–26 to school medicine and physical education, that of *Bulletin Médical* of August 28 to biology, and that of *Paris Médical* for September 4 to ophthalmology, oto-rhino-laryngology, and stomatology.

The *Practitioner* publishes this month an extra number (price 1s.) to commemorate its move to a new home in the medical quarter of London at 5, Bentinck Street, W.1. This special issue is admirably produced. The Editor, Sir Humphry Rolleston, contributes a short foreword; Dr. C. H. Reilly, emeritus professor of architecture in the University of Liverpool, discusses the design of the new building; and Mr. Walter Goodesmith describes the installation, equipment, fitments, and furniture.

It was announced in the *Journal* of July 8, 1933 (p. 71) that a supply of serum obtained from patients convalescent from acute poliomyelitis would be issued by the Public Health Department of the London County Council. We are now informed by Dr. J. A. H. Brincker that serum from convalescent poliomyelitis cases is no longer available for issue from the Western Hospital.

On September 6 Lady Pearson, widow of Sir Arthur Pearson, the founder of St. Dunstan's, laid the foundation-stone of the new St. Dunstan's Home which is being erected at a cost of more than £100,000 on the cliffs at Ovingdean, near Brighton. Sir Ian Fraser, chairman of St. Dunstan's, presided at the ceremony, and after speeches of welcome by the Mayors of Brighton and Hove the scheme was explained by Colonel E. M. Ball, chairman of the building committee.

The postgraduate course on the modern treatment of fractures which has just been concluded at the Bristol Royal Infirmary was so successful that it is proposed to hold a similar course, lasting one week, in January, 1938.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone, unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Secretary, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

All communications with reference to ADVERTISEMENTS should be addressed to the Advertisement Manager. Orders for copies of the *Journal* and communications with reference to subscriptions should be addressed to the Secretary, B.M.A. House, Tavistock Square, W.C.1.

The TELEPHONE NUMBER of the British Medical Association and the *British Medical Journal* is EUSTON 2111.

The TELEGRAPHIC ADDRESSES are
EDITOR OF THE *BRITISH MEDICAL JOURNAL*, *Aitiology Westcent, London.*
SECRETARY, *Medisecra Westcent, London.*

The address of the B.M.A. Scottish Office is 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh;* telephone: 24361 Edinburgh), and of the Office of the Irish Free State Medical Union (I.M.A. and B.M.A.), 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin;* telephone 62550 Dublin).

QUERIES AND ANSWERS

Treatment of Mycosis Fungoides

"M. C." asks for advice on the treatment of a patient suffering from mycosis fungoides which has progressed rapidly in spite of treatment by *x* rays and malarial therapy.

Buccal and Lingual Ulcers

"PUZZLED" writes: A married woman, aged 27, who recently consulted me, states that she has had recurrent painful ulcers of the tongue and buccal mucous membrane since an attack of influenza five and a half years ago. I find that the Wassermann reaction is negative, scrapings of the ulcers show no evidence of a fungus, and examination of the blood excludes the anaemias. *X*-ray examination of the alimentary tract done some months ago was also said to be negative. I should be grateful for any suggestions as to the causation and treatment of this condition.

Splitting Finger-nails

Dr. R. A. GARDNER, in reply to Dr. Stiven (*Journal*, August 7, p. 306), writes: For the splitting of finger-nails, probably due to over-exposure to *x* rays fifteen years ago, some authorities recommended "durafix." If this is not obtainable in Cairo, ciné-film cement—celluloid dissolved in amyl acetate—would probably be efficient in filling the cracks and thus preventing their irritation. Although many of the essential facts regarding protection from radiation were known at the beginning of this century, the first safety recommendations were issued in England in the early twenties only. Even so late as the present year they had not been adopted fully by the principal hospital in Cairo. In this regard there is much to be said for the action of the Italian Government in requiring the licensing of *x*-ray installations. *X*-ray "screen" examination should be a harmless procedure, but unfortunately it gives no warning of the severe injury it is capable of producing under certain conditions to both doctor and patient.

LETTERS, NOTES, ETC.

Vagitus Uterinus

Dr. E. A. DOUGLAS writes from Lucknow: Vagitus uterinus appears to be a sufficiently exceptional condition to make it worth while reporting a case we had in the Kinnaird Hospital on February 17, 1937. The patient, a Mohammedan primipara of 32 years, married eighteen years, who had been attending the ante-natal clinic since her third month of pregnancy, was admitted to hospital on February 4, 1937, at almost full term. The presentation was transverse, the foetal heart good. The pelvic measurements were apparently normal, but there was cervical erosion and a vaginal discharge. Attempts to correct the position of the child failed. On February 7 the presentation was breech, but later reverted to transverse. On February 17, early in the morning, the patient passed a quantity of liquor amnii, but there was no pain until 9 a.m., when a vaginal examination was made. The os was two fingers dilated, the membranes were ruptured, and an elbow was presenting. It was not then possible to perform version. I first saw the patient at 12.30 p.m. the same day. The pains were strong; head was still lying in a transverse position, though not actually in the iliac fossa; the foetal heart was good. At 1 p.m. the patient was anaesthetized, and I found the os almost fully dilated, with both hand and foot presenting. Version was easy. The presenting foot, which proved to be the right, was brought down. I was about to put my hand into the vagina to bring down the second foot when the baby drew up its foot, and we heard a muffled sound coming from the abdomen. Five of us who were present in the labour ward definitely heard the cry. I brought down the second leg, and again the baby cried. There was no delay in delivering the shoulders, but the head stuck, and I quickly delivered with forceps on the after-coming head. The baby, a female weighing 5 lb., was born in a state of blue asphyxia, but very soon recovered.

Parathyroid Extract and Enlarged Prostate

Dr. F. O. TAYLOR (Coldingham, Berwickshire) writes: Mr. A. P. Bertwistle describes a dramatic "cure" "under the exhibition of parathyroid extract grain 1/2." If I had known of this treatment last year, and found it so successful, I should have been able to ease much suffering. As I should like to know more about this treatment, perhaps Mr. Bertwistle will state the manner in which he "exhibited" the 1/2 grain of parathyroid extract. These notes would be of much greater use if just a little more detail were given us to bite upon.